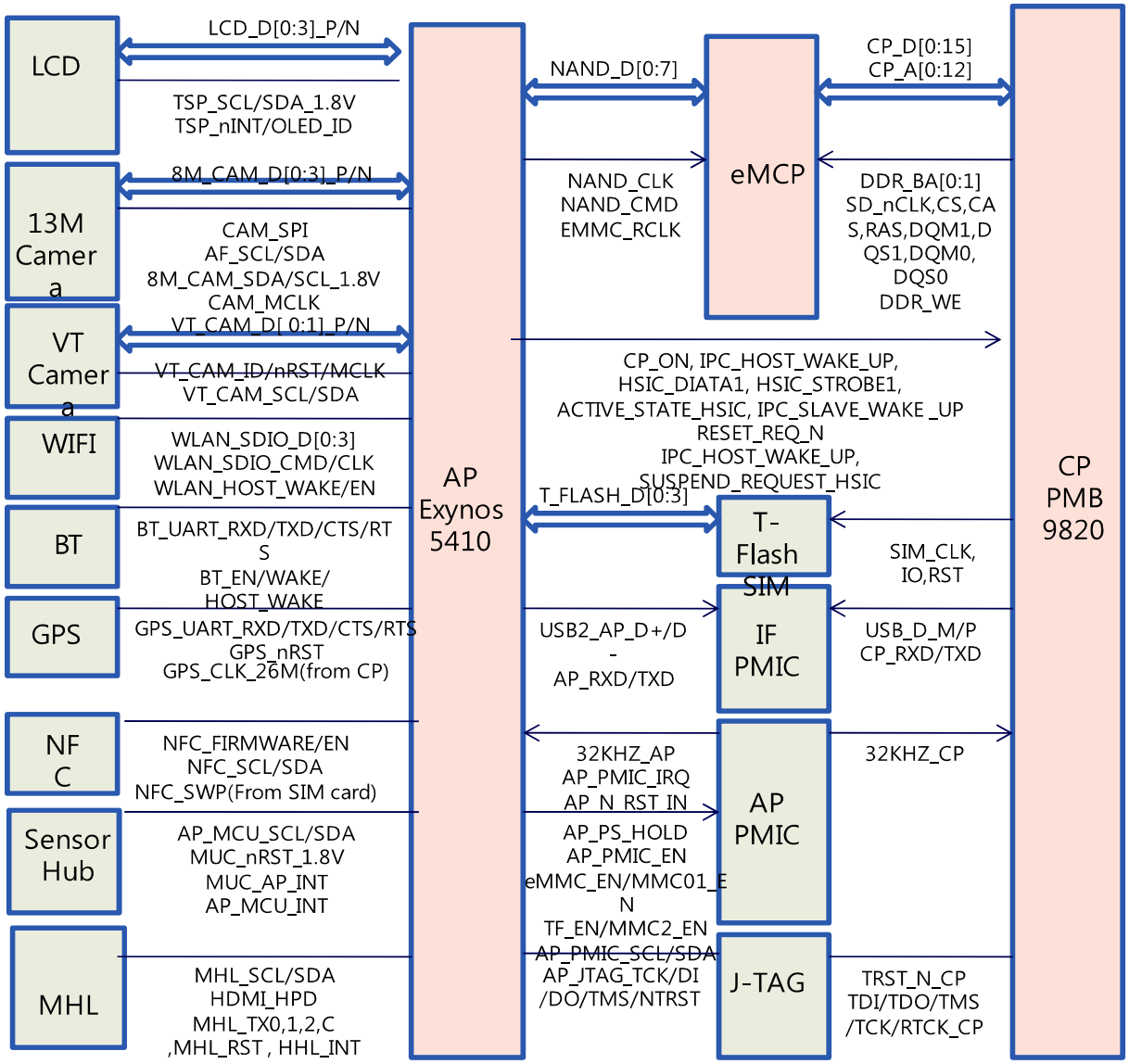
8. Level 3 Repair

8-1. Block Diagram



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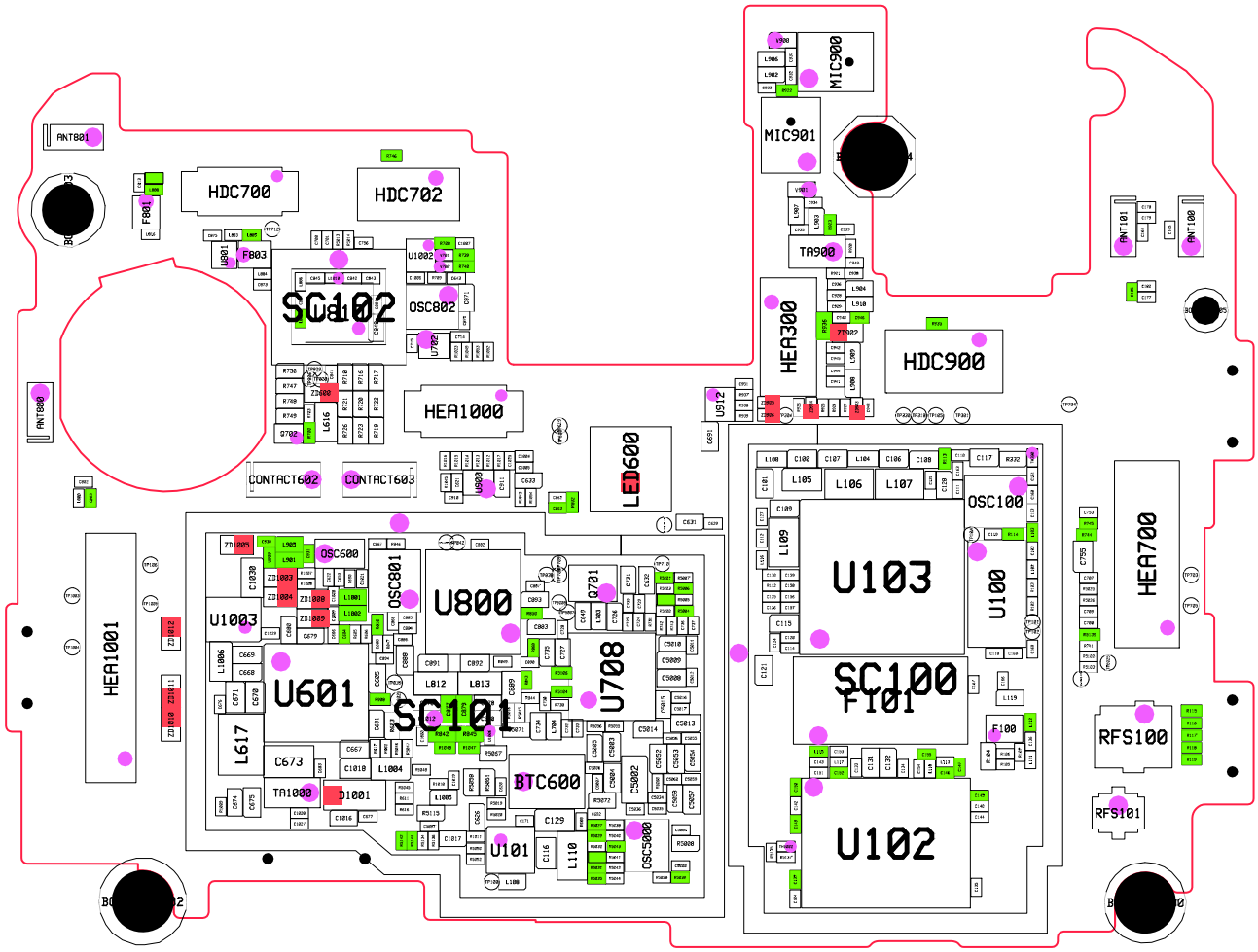
8-2. PCB Diagrams

8-2-1. Top



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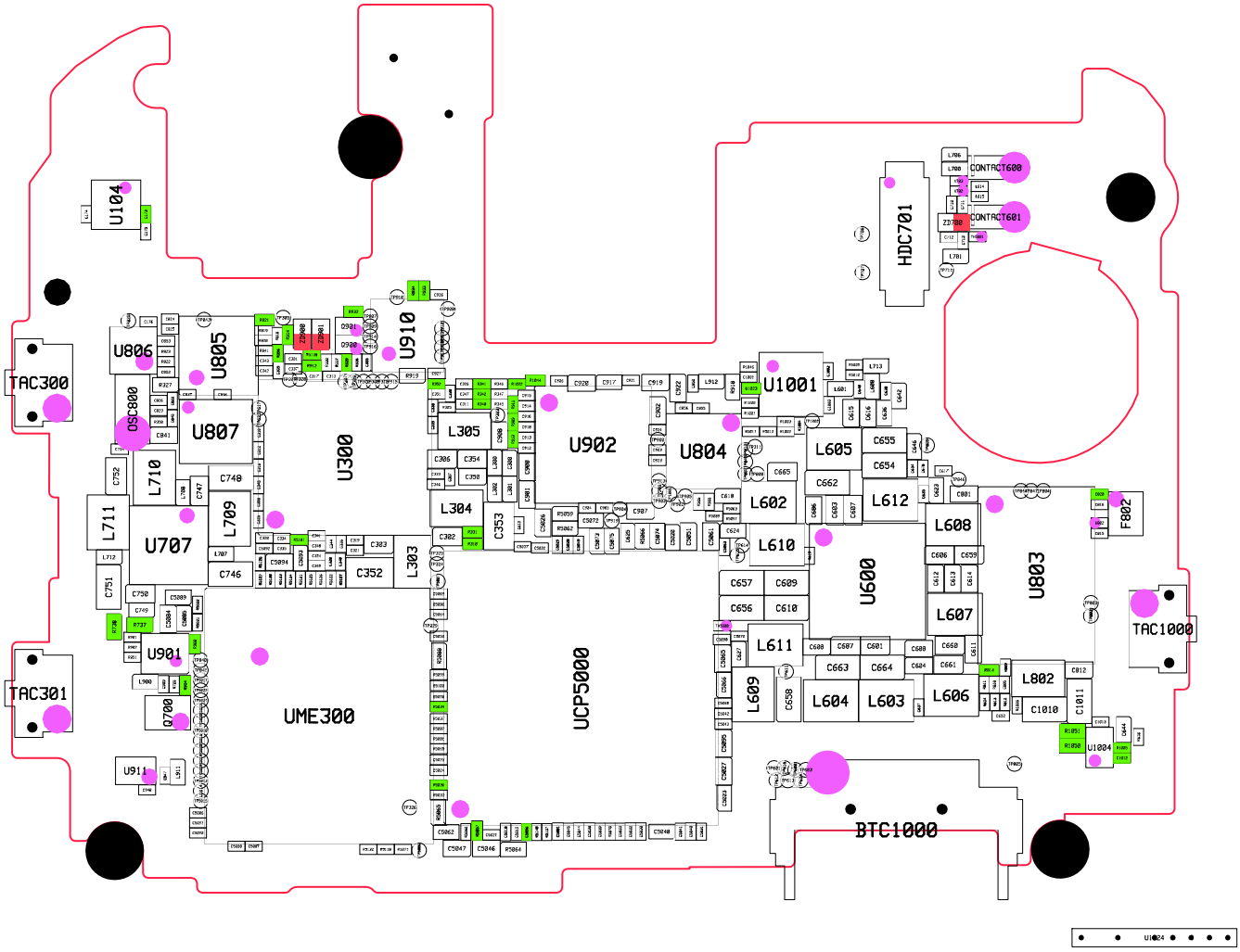
8-2-2. Bottom



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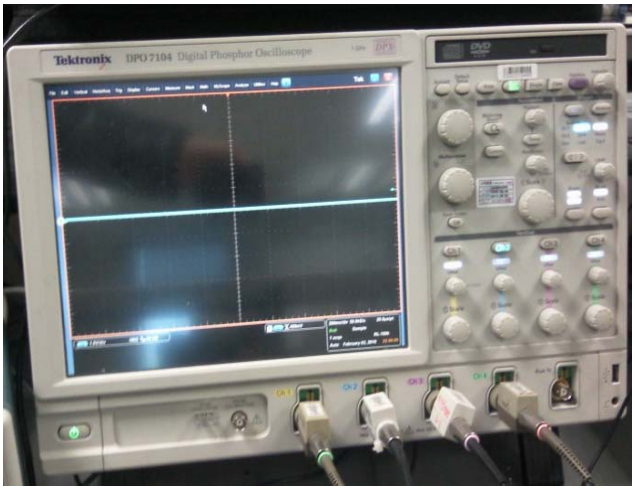
8-3. Flow Chart of Troubleshooting

Equipments

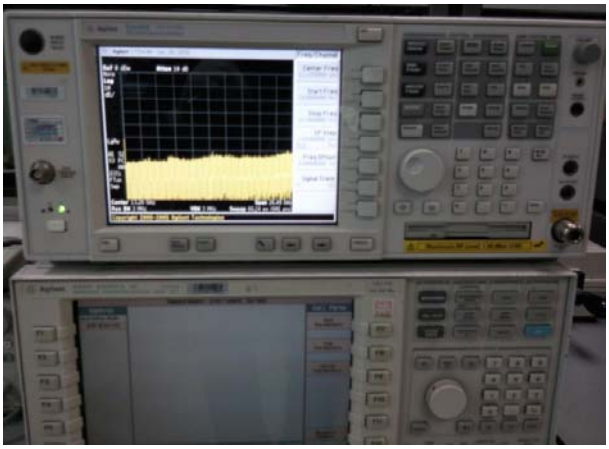


↑ Oscilloscope

↑ Digital Multi-meter

↑ Power Supply

↑ + driver, ESD Safe Tweezer



↑ 8960 & Spectrum Analyzer

↑ Soldering iron

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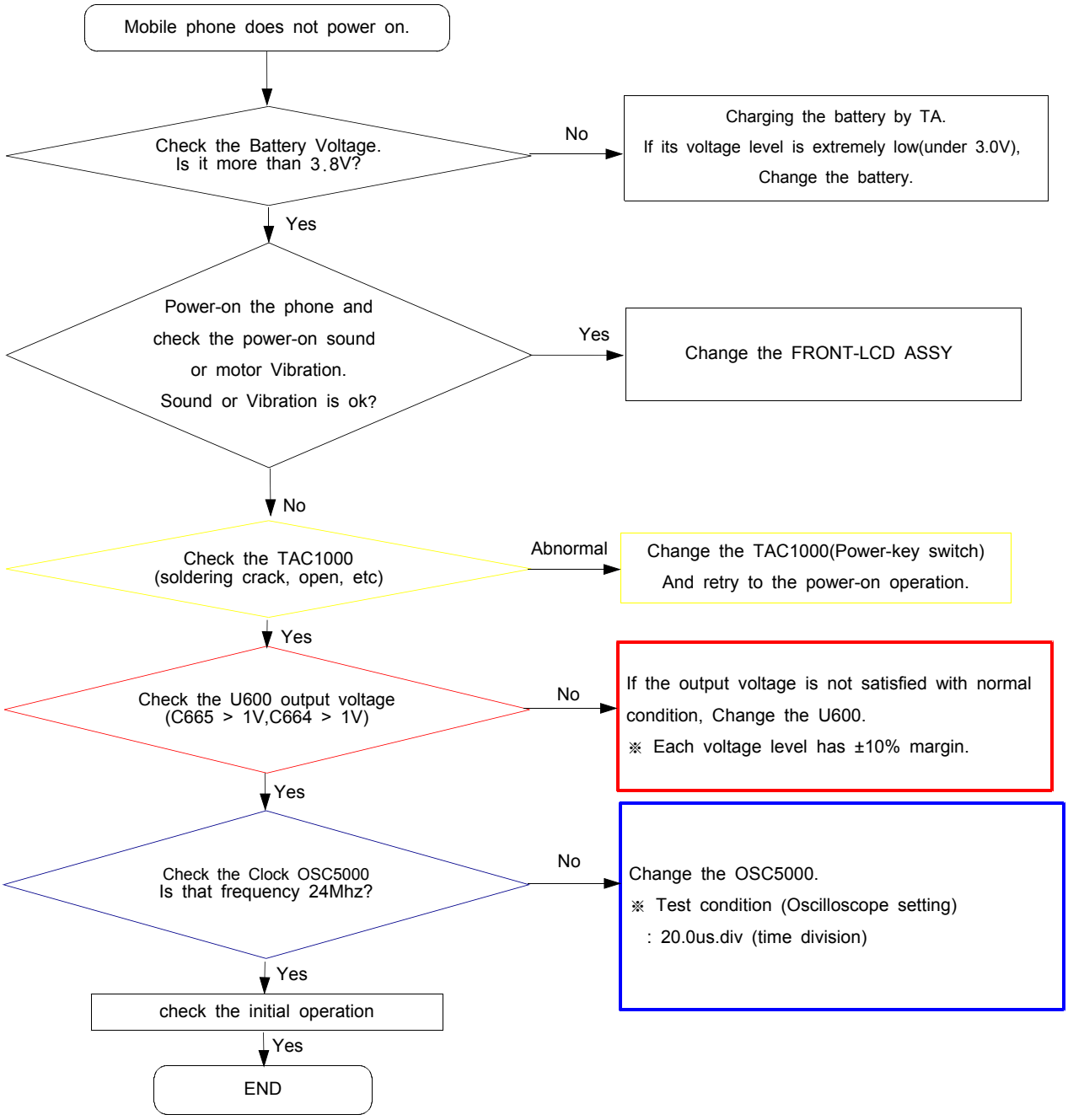
8-3-1. Power On



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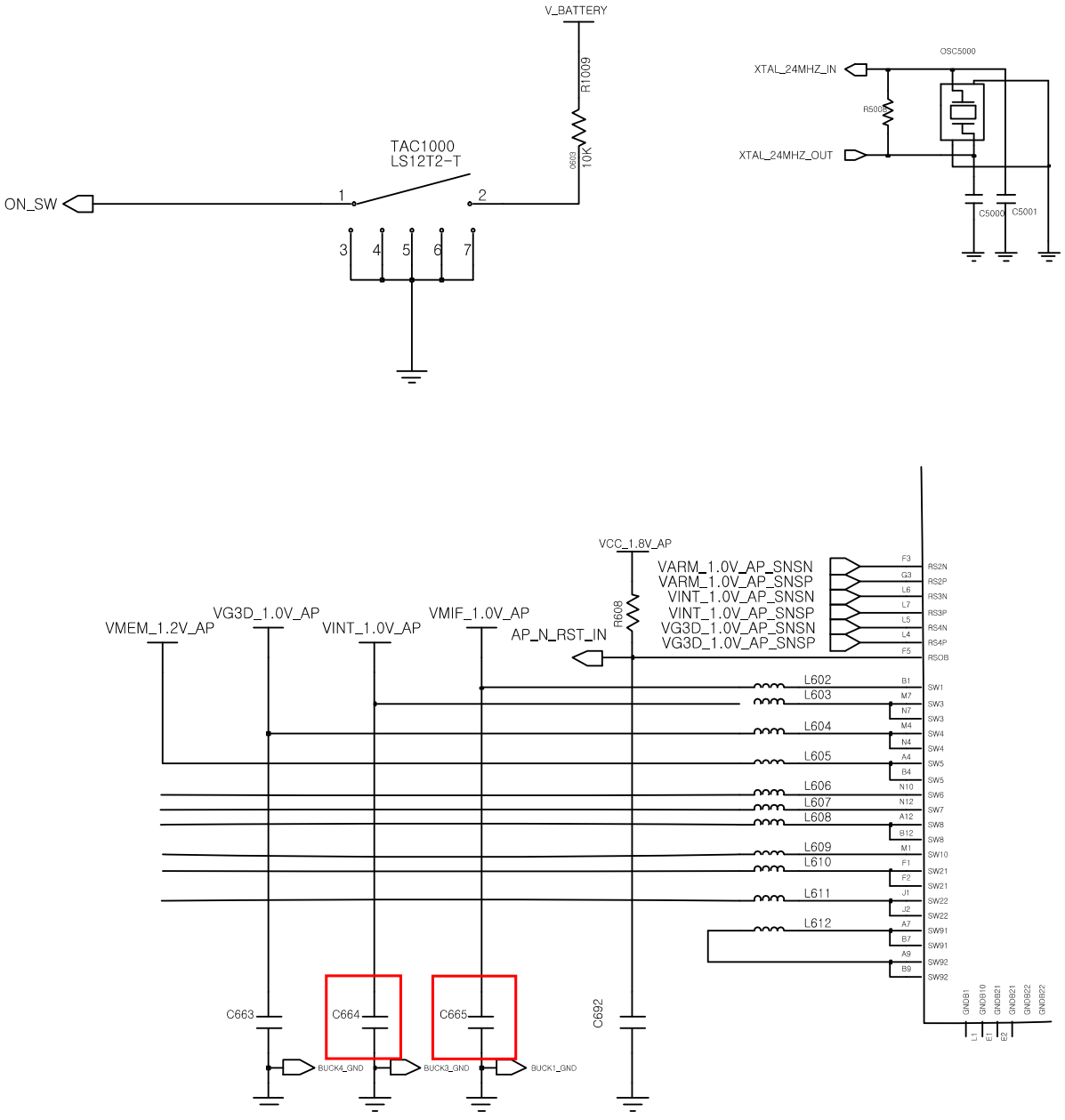

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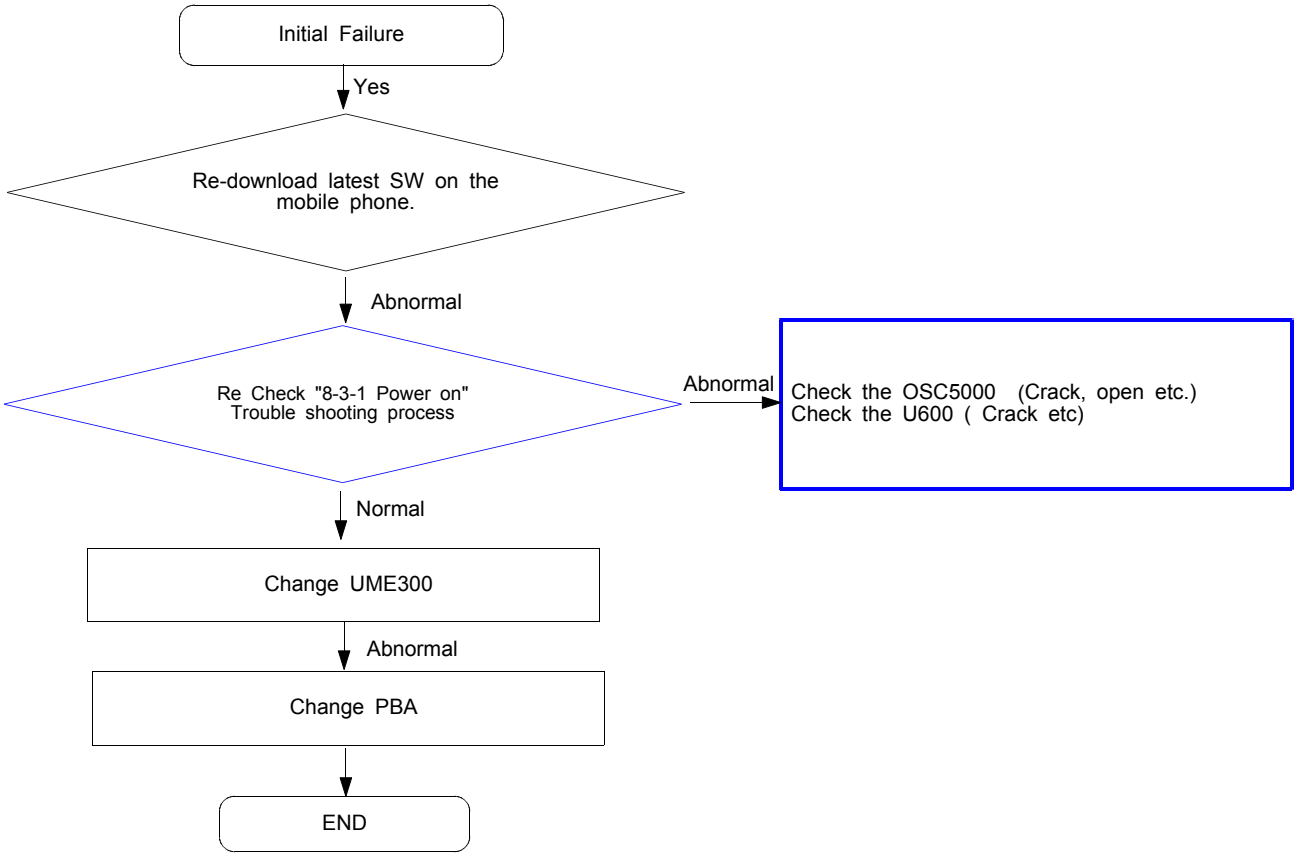
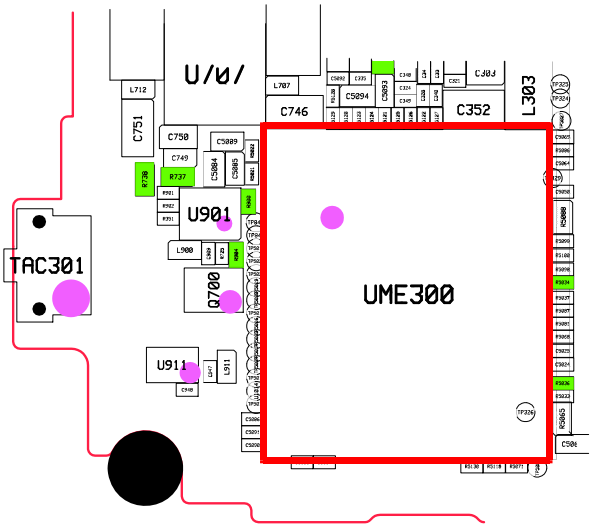
8-3-2. Initial





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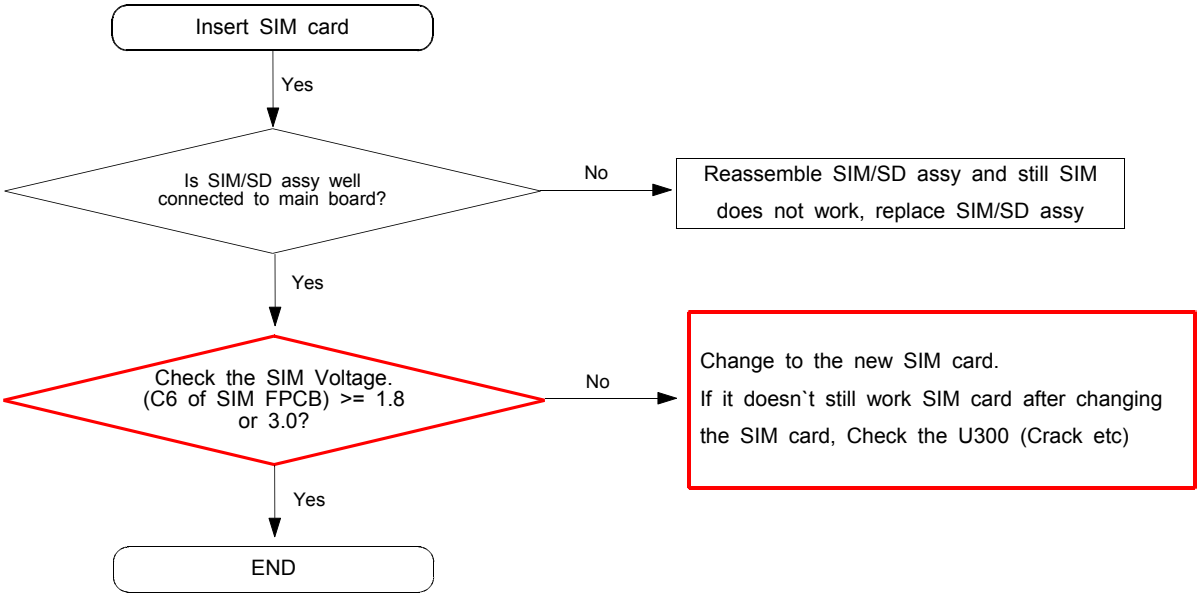
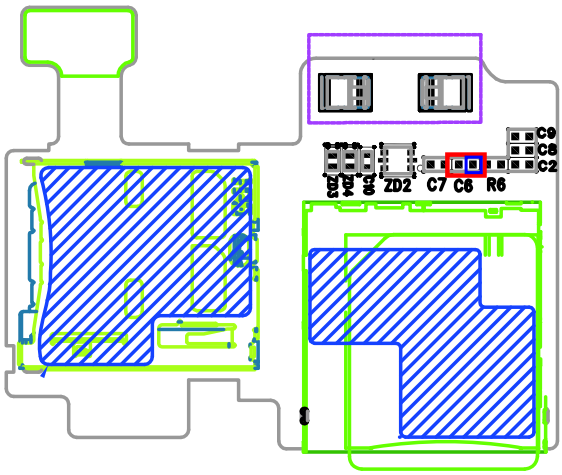
8-3-3. Sim Part


Insert SIM card
Yes
Is SIM/SD assy well connected to main board?
No
Reassemble SIM/SD assy and still SIM does not work, replace SIM/SD assy
Yes
Check the SIM Voltage. (C6 of SIM FPCB) >= 1.8 or 3.0?
No
Change to the new SIM card.
If it doesn`t still work SIM card after changing the SIM card, Check the U300 (Crack etc)
Yes
END



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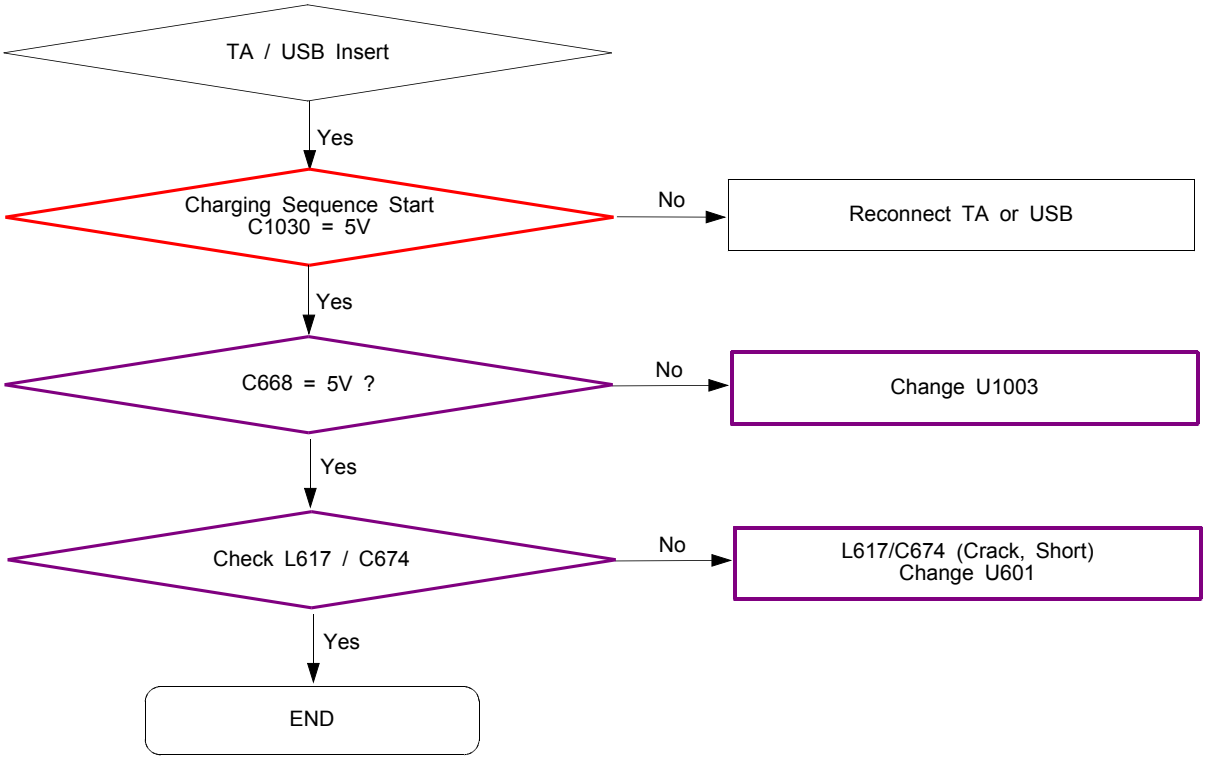
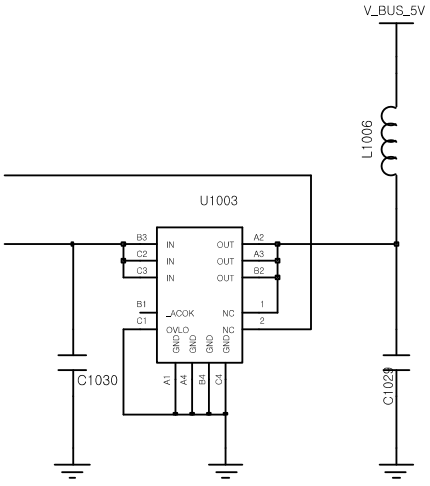
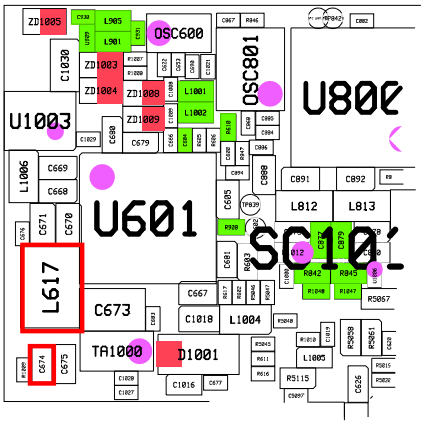
8-3-4. Charging Part







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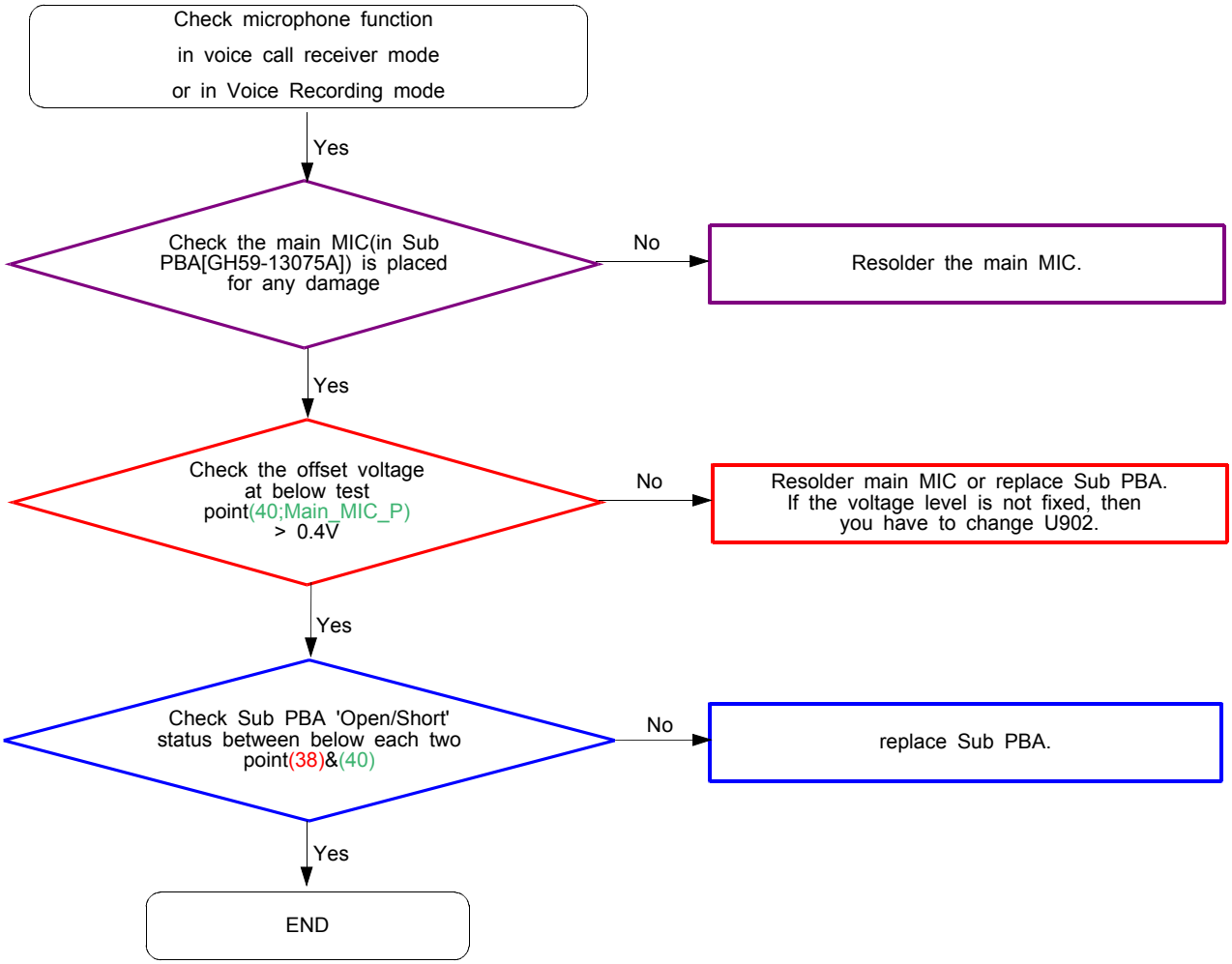
8-3-5. Microphone Part


Check microphone function
in voice call receiver mode
or in Voice Recording mode
Yes
Check the main MIC(in Sub PBA[GH59-13075A]) is placed for any damage
No
Resolder the main MIC.
Yes
Check the offset voltage at below test point(40;Main_MIC_P) > 0.4V
No
Resolder main MIC or replace Sub PBA. If the voltage level is not fixed, then you have to change U902.
Yes
Check Sub PBA 'Open/Short' status between below each two point(38)&(40)
No
replace Sub PBA.
Yes
END

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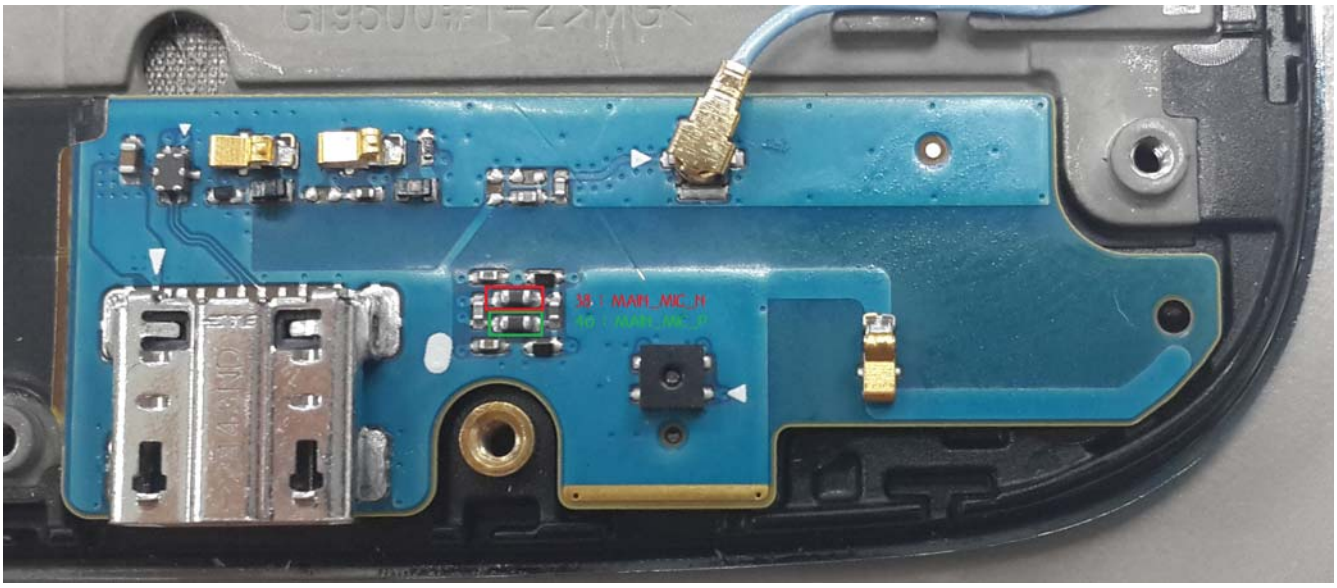

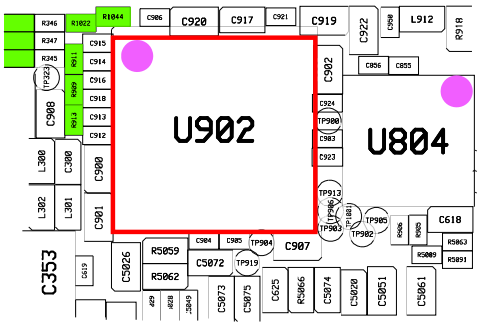

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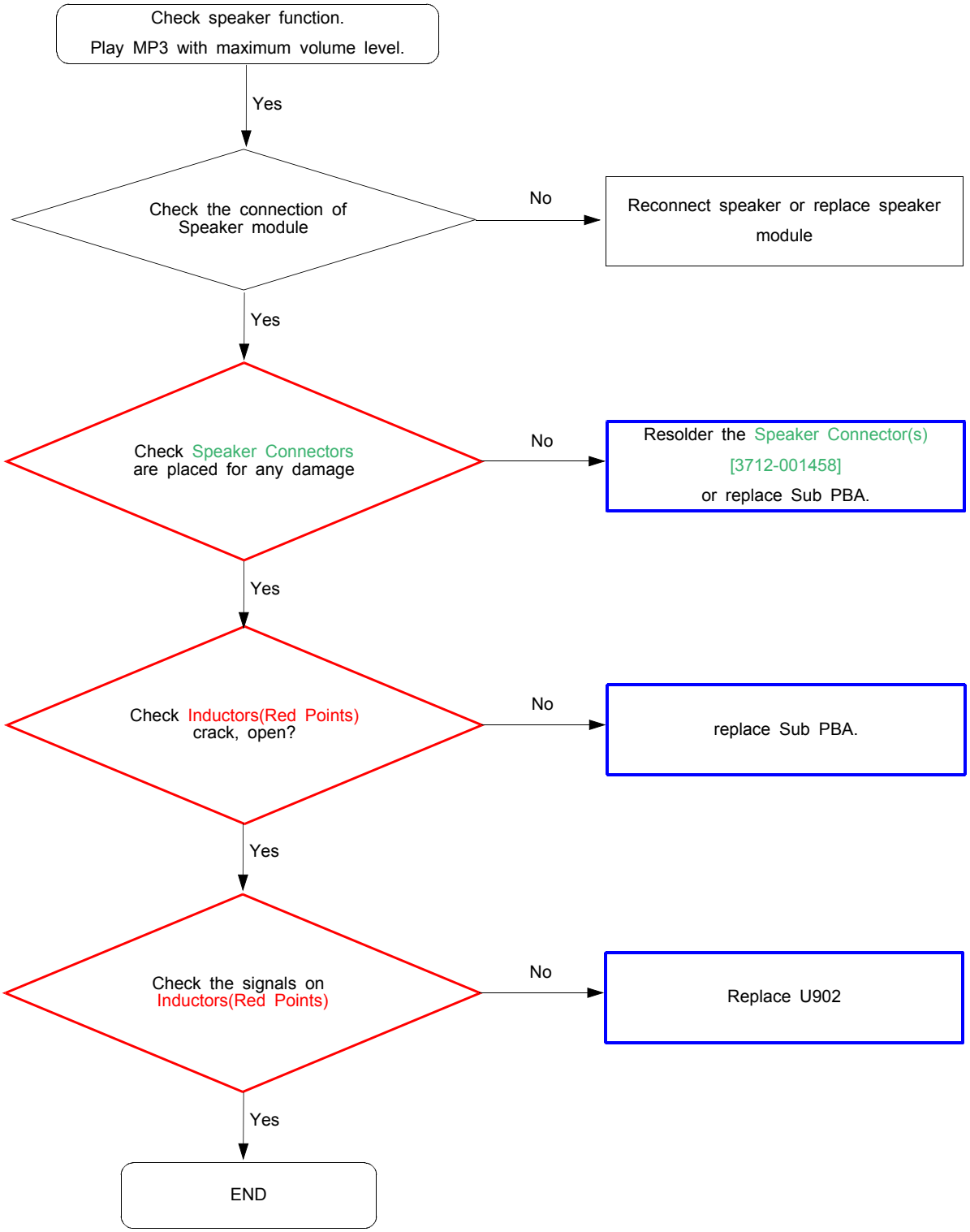
8-3-6. Speaker Part



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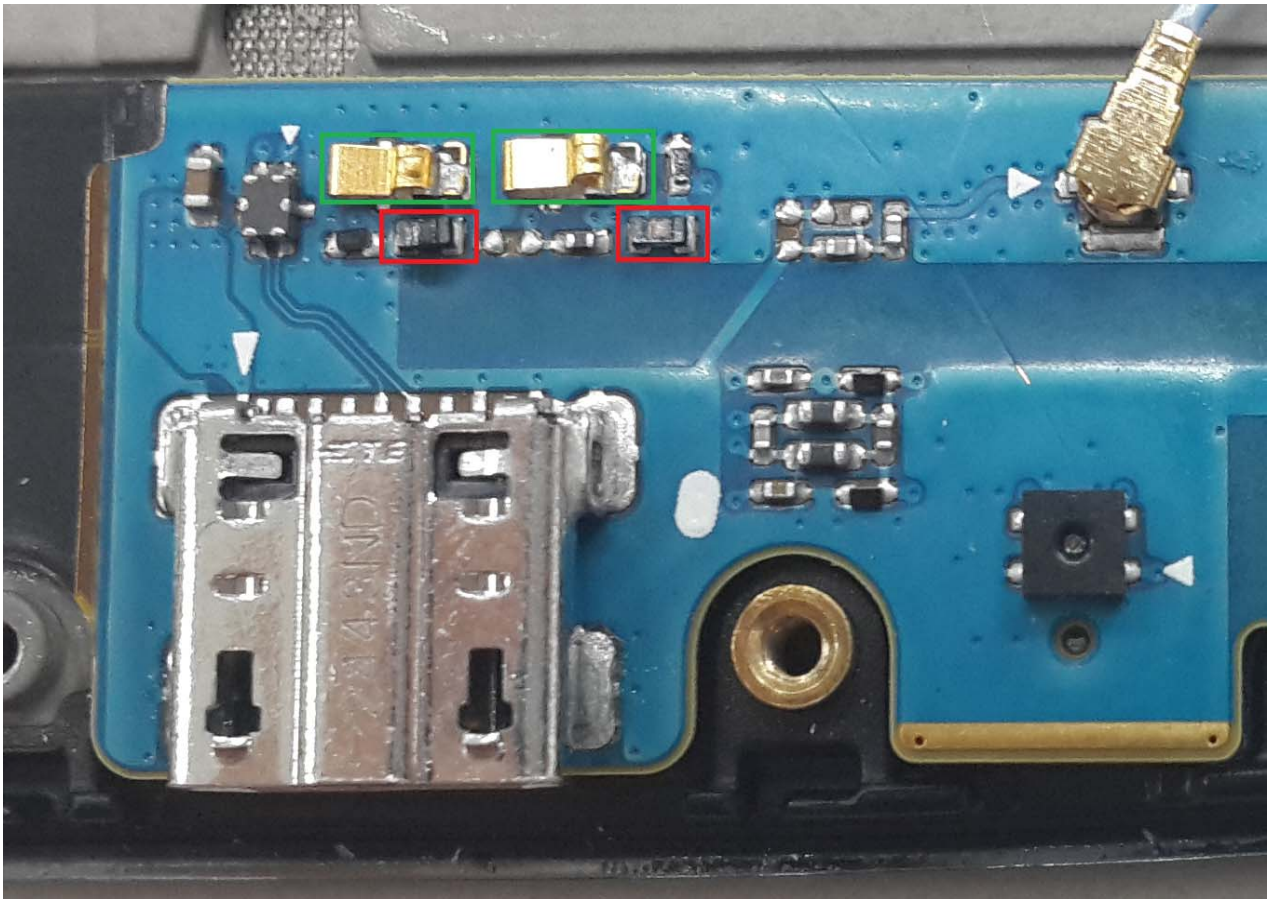

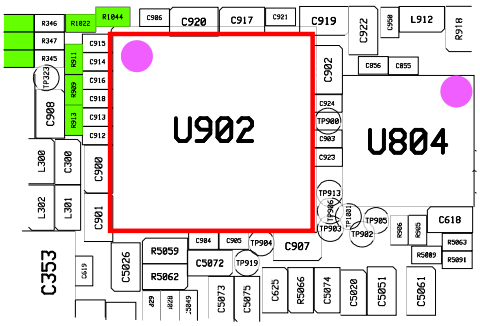

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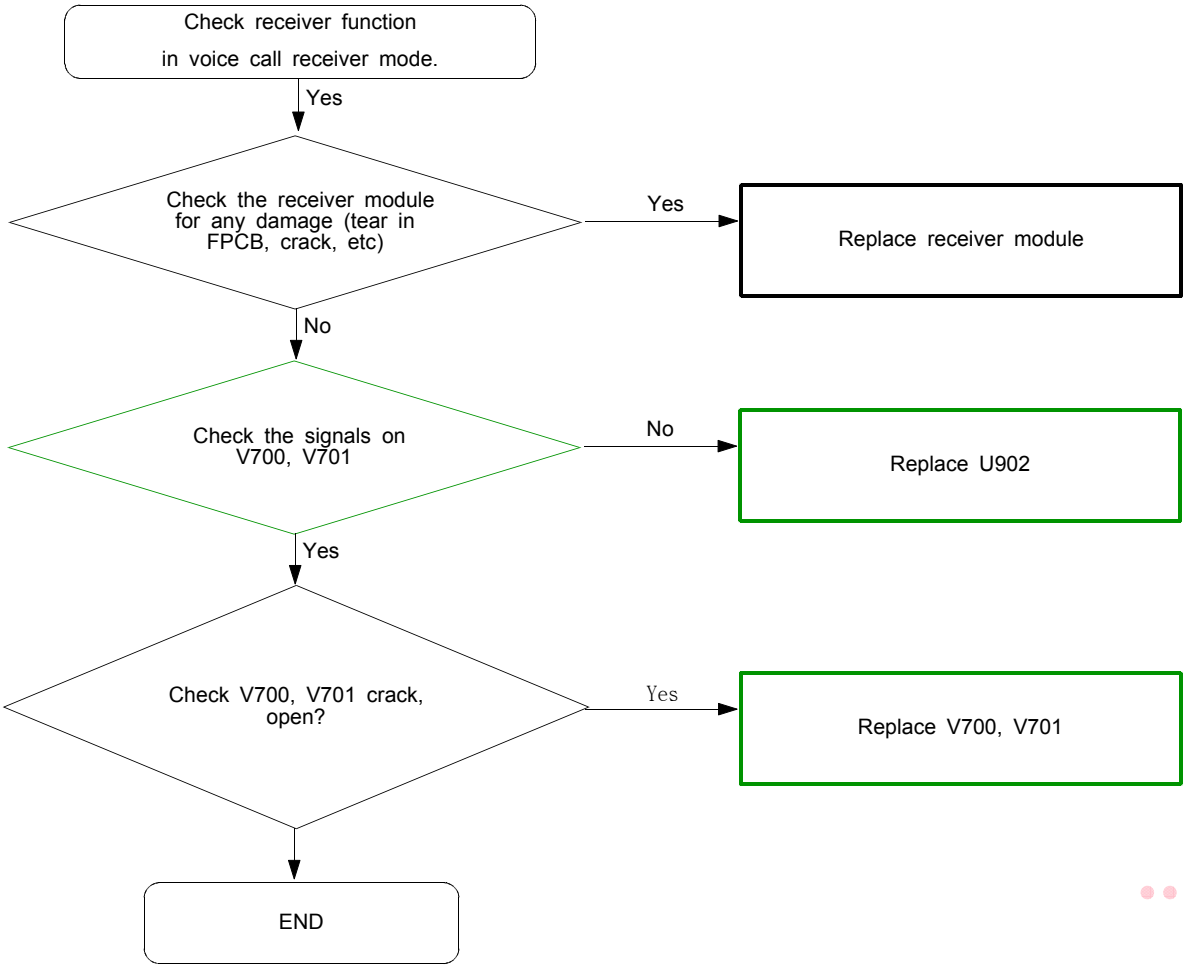
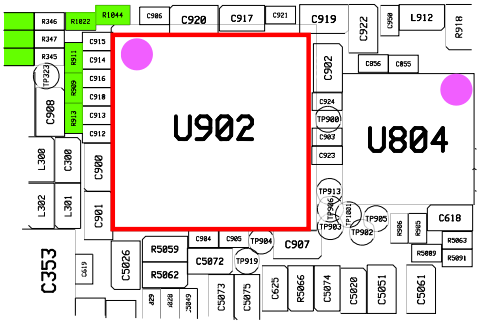
8-3-7 Receiver Part





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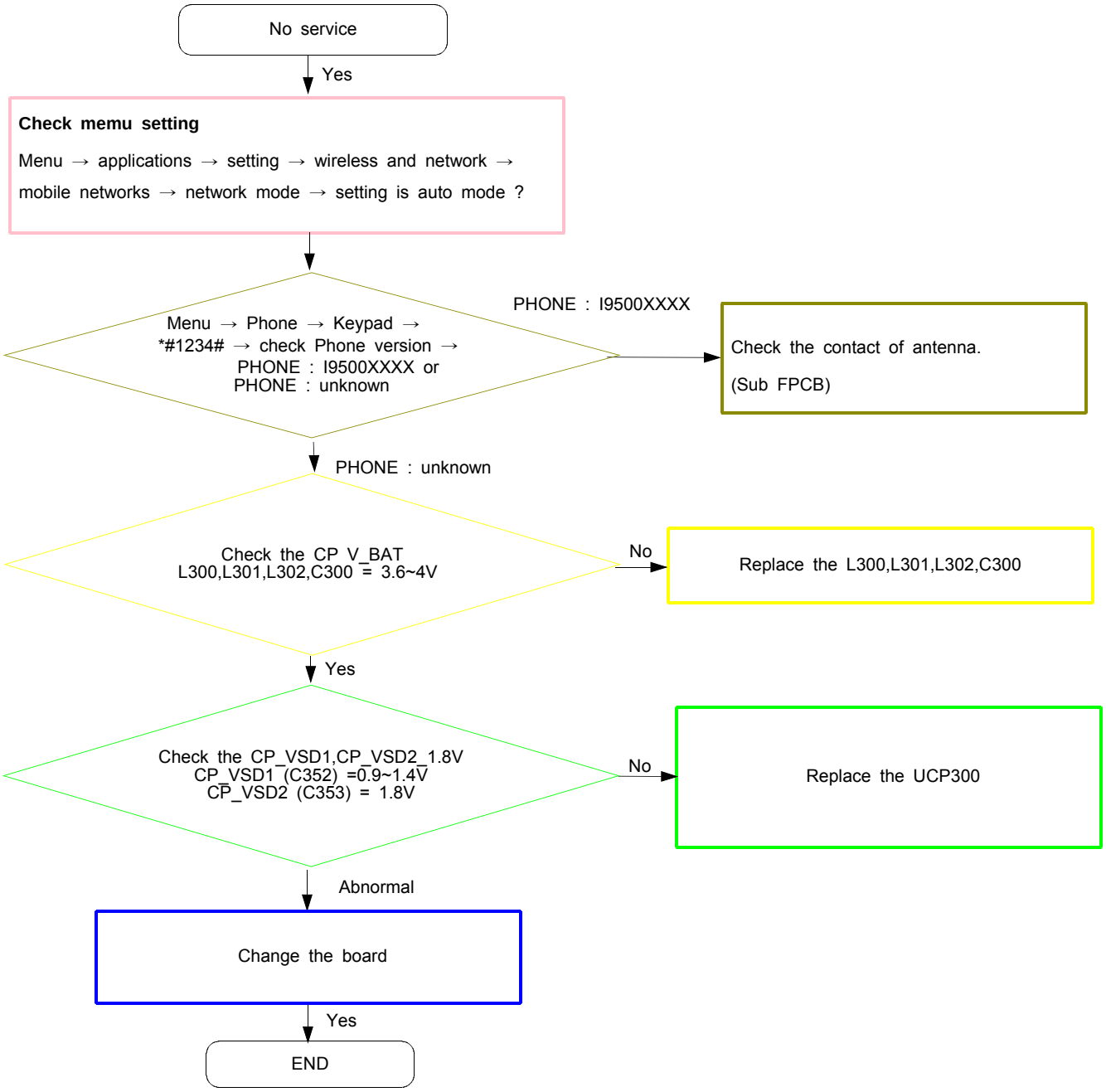
8-3-8. No Service


No service
Yes
Check memu setting
Menu → applications → setting → wireless and network → mobile networks → network mode → setting is auto mode ?
Menu → Phone → Keypad → *#1234# → check Phone version → PHONE : I9500XXXX or PHONE : unknown
PHONE : I9500XXXX
Check the contact of antenna.
(Sub FPCB)
PHONE : unknown
Check the CP V_BAT L300,L301,L302,C300 = 3.6~4V
No
Replace the L300,L301,L302,C300
Yes
Check the CP_VSD1,CP_VSD2_1.8V CP_VSD1 (C352) =0.9~1.4V CP_VSD2 (C353) = 1.8V
No
Replace the UCP300
Abnormal
Change the board
Yes
END

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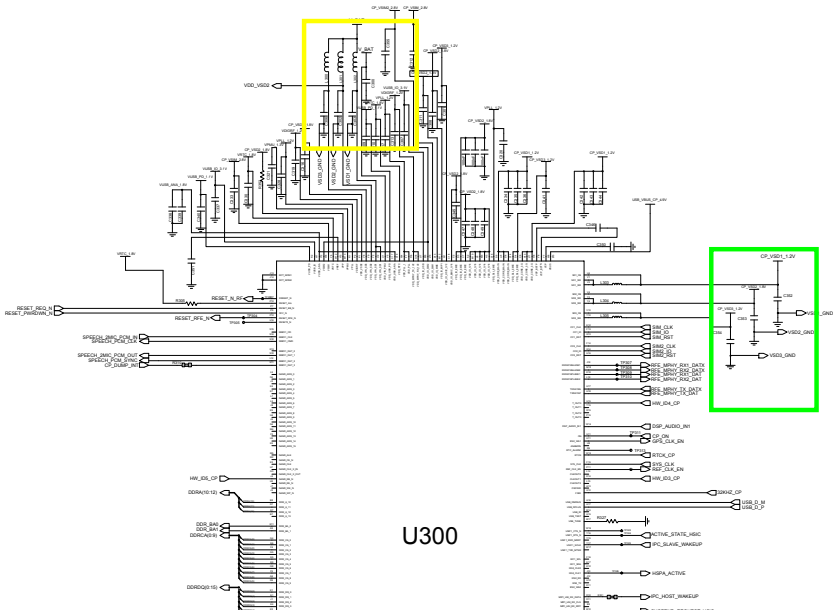

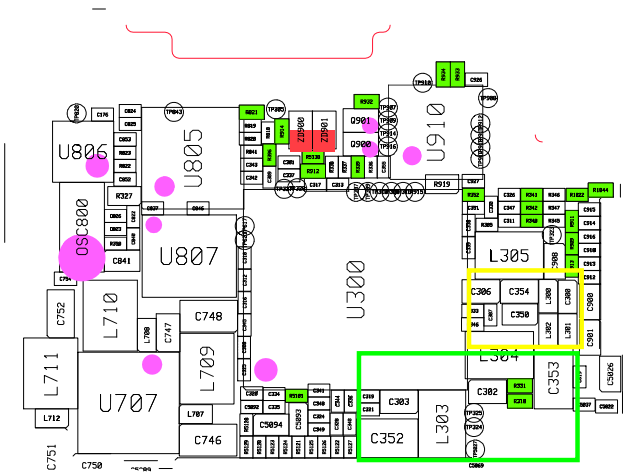

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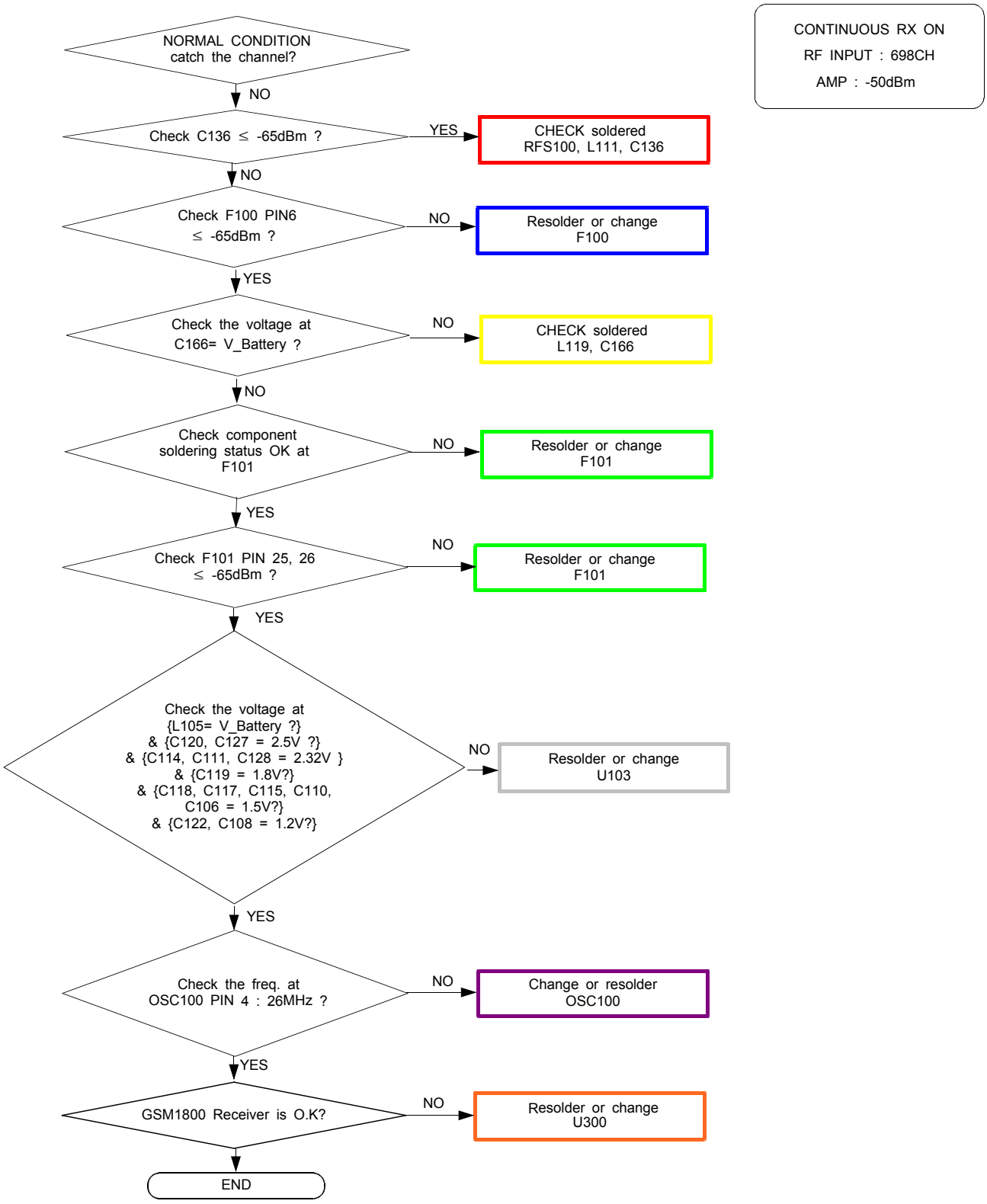
8-3-9. GSM1800 RX


CONTINUOUS RX ON
RF INPUT : 698CH
AMP : -50dBm
NORMAL CONDITION catch the channel?
NO
Check C136 ≤ -65dBm ?
YES
CHECK soldered RFS100, L111, C136
NO
Check F100 PIN6 ≤ -65dBm ?
NO
Resolder or change F100
YES
Check the voltage at C166= V_Battery ?
NO
CHECK soldered L119, C166
NO
Check component soldering status OK at F101
NO
Resolder or change F101
YES
Check F101 PIN 25, 26 ≤ -65dBm ?
NO
Resolder or change F101
YES
Check the voltage at {L105= V_Battery ?} & {C120, C127 = 2.5V ?} & {C114, C111, C128 = 2.32V } & {C119 = 1.8V?} & {C118, C117, C115, C110, C106 = 1.5V?} & {C122, C108 = 1.2V?}
NO
Resolder or change U103
YES
Check the freq. at OSC100 PIN 4 : 26MHz ?
NO
Change or resolder OSC100
YES
GSM1800 Receiver is O.K?
NO
Resolder or change U300
END

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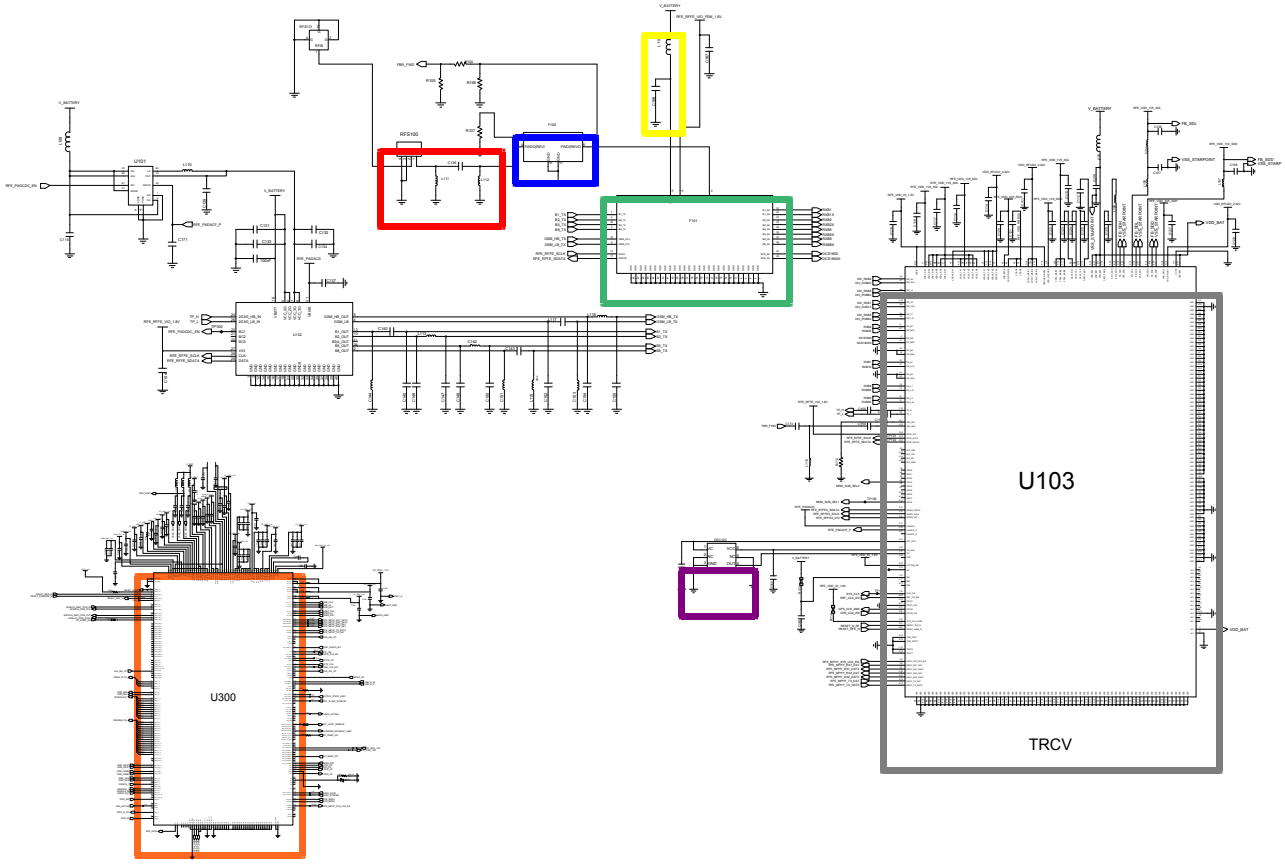

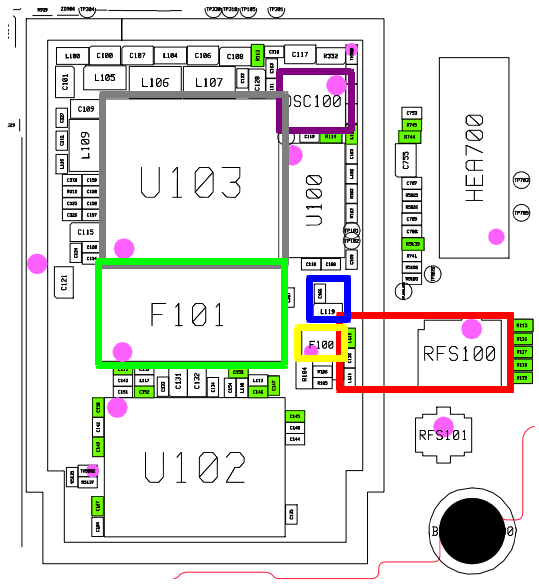

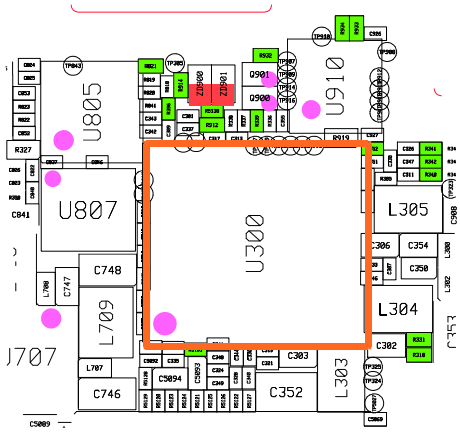

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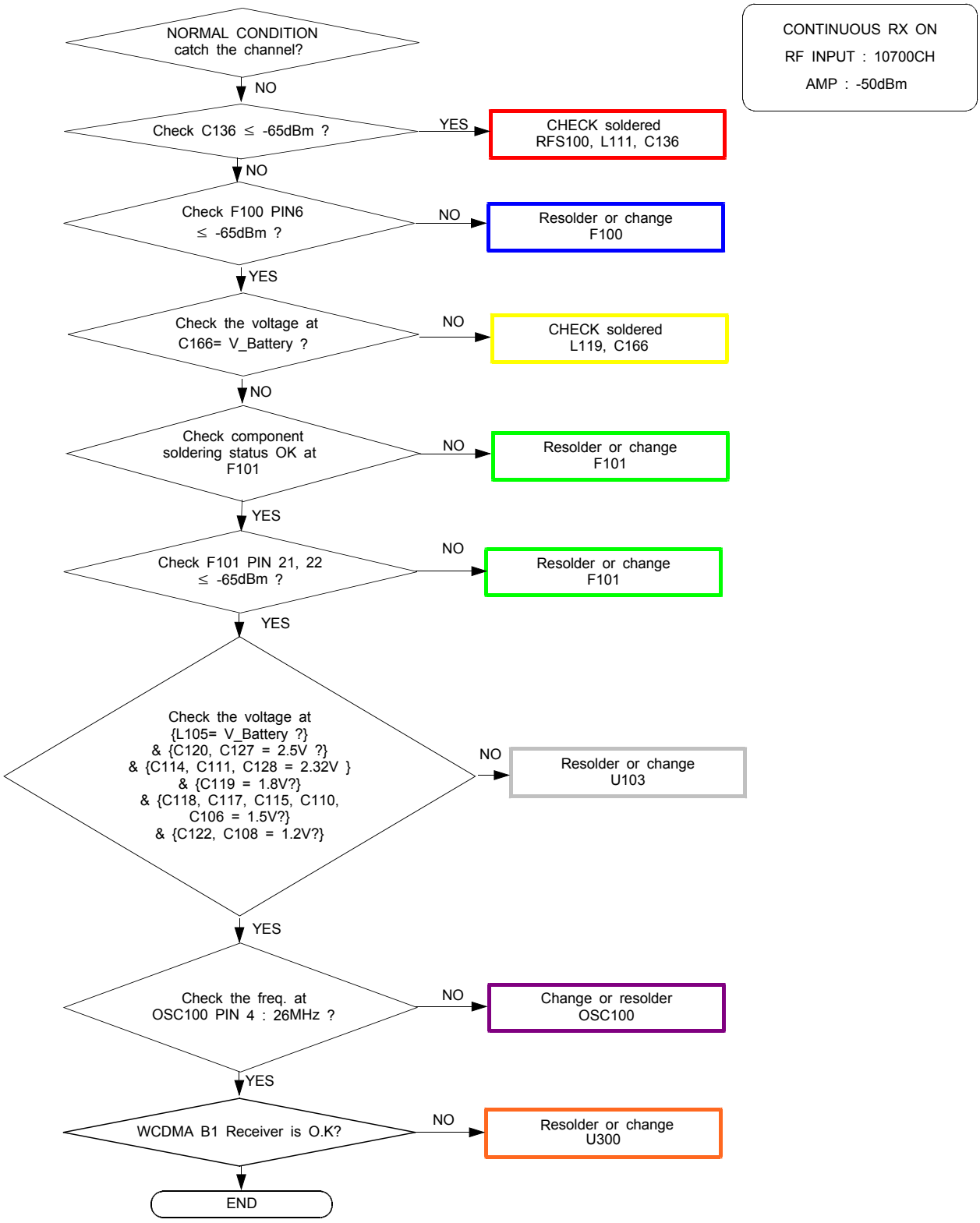
8-3-10. WCDMA Band1 RX


CONTINUOUS RX ON
RF INPUT : 10700CH
AMP : -50dBm
NORMAL CONDITION catch the channel?
NO
Check C136 ≤ -65dBm ?
YES
CHECK soldered RFS100, L111, C136
NO
Check F100 PIN6 ≤ -65dBm ?
NO
Resolder or change F100
YES
Check the voltage at C166= V_Battery ?
NO
CHECK soldered L119, C166
NO
Check component soldering status OK at F101
NO
Resolder or change F101
YES
Check F101 PIN 21, 22 ≤ -65dBm ?
NO
Resolder or change F101
YES
Check the voltage at {L105= V_Battery ?} & {C120, C127 = 2.5V ?} & {C114, C111, C128 = 2.32V } & {C119 = 1.8V?} & {C118, C117, C115, C110, C106 = 1.5V?} & {C122, C108 = 1.2V?}
NO
Resolder or change U103
YES
Check the freq. at OSC100 PIN 4 : 26MHz ?
NO
Change or resolder OSC100
YES
WCDMA B1 Receiver is O.K?
NO
Resolder or change U300
END

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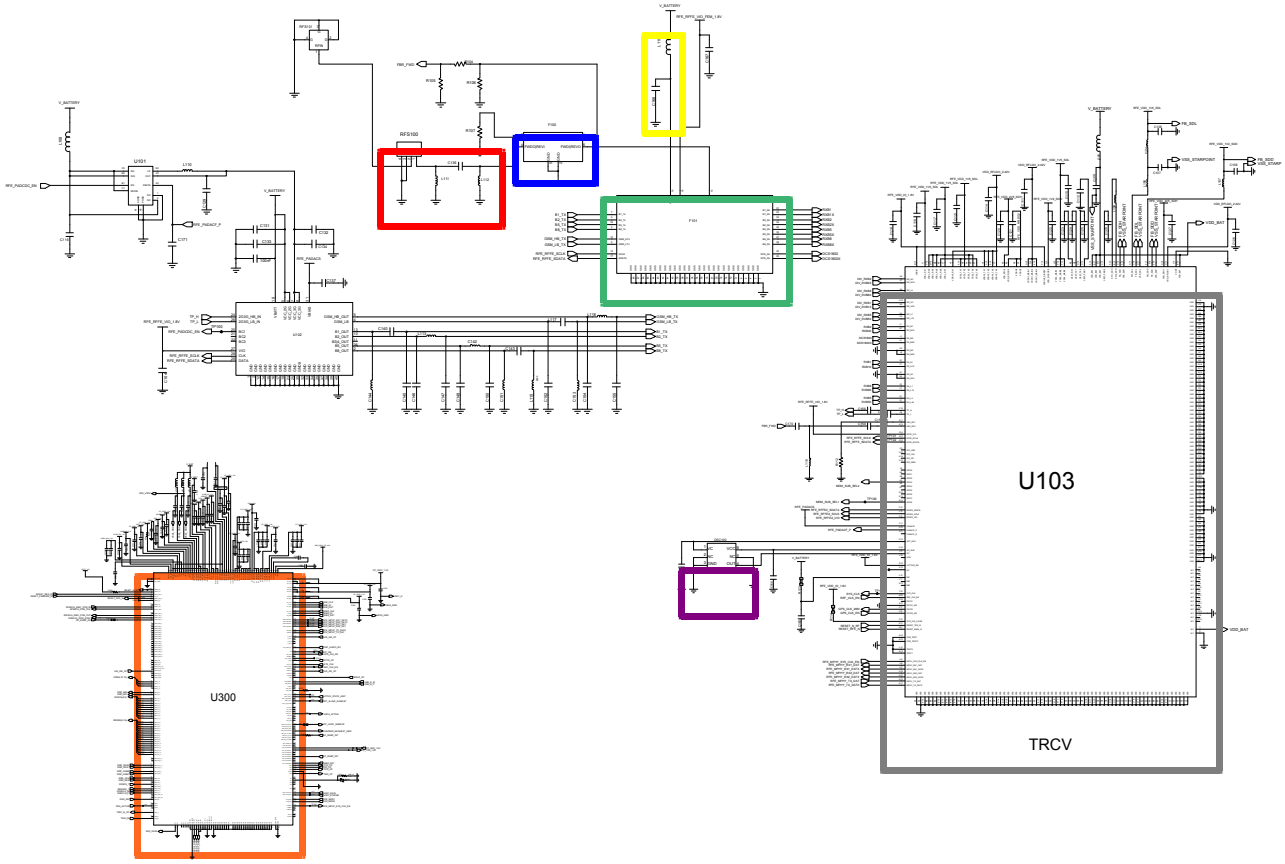

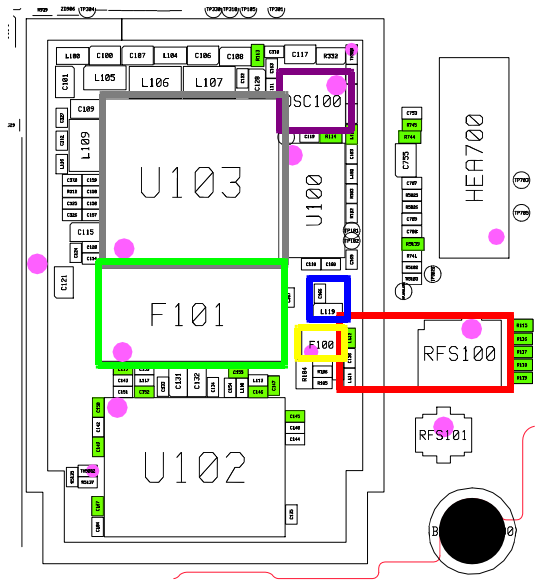

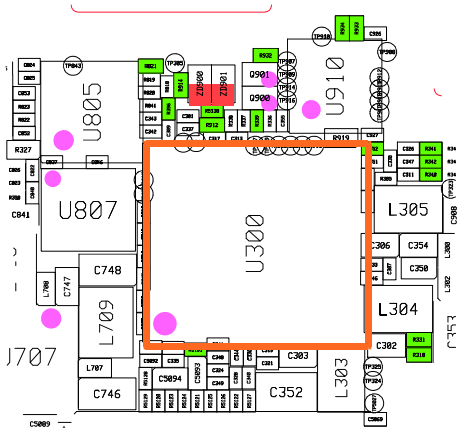

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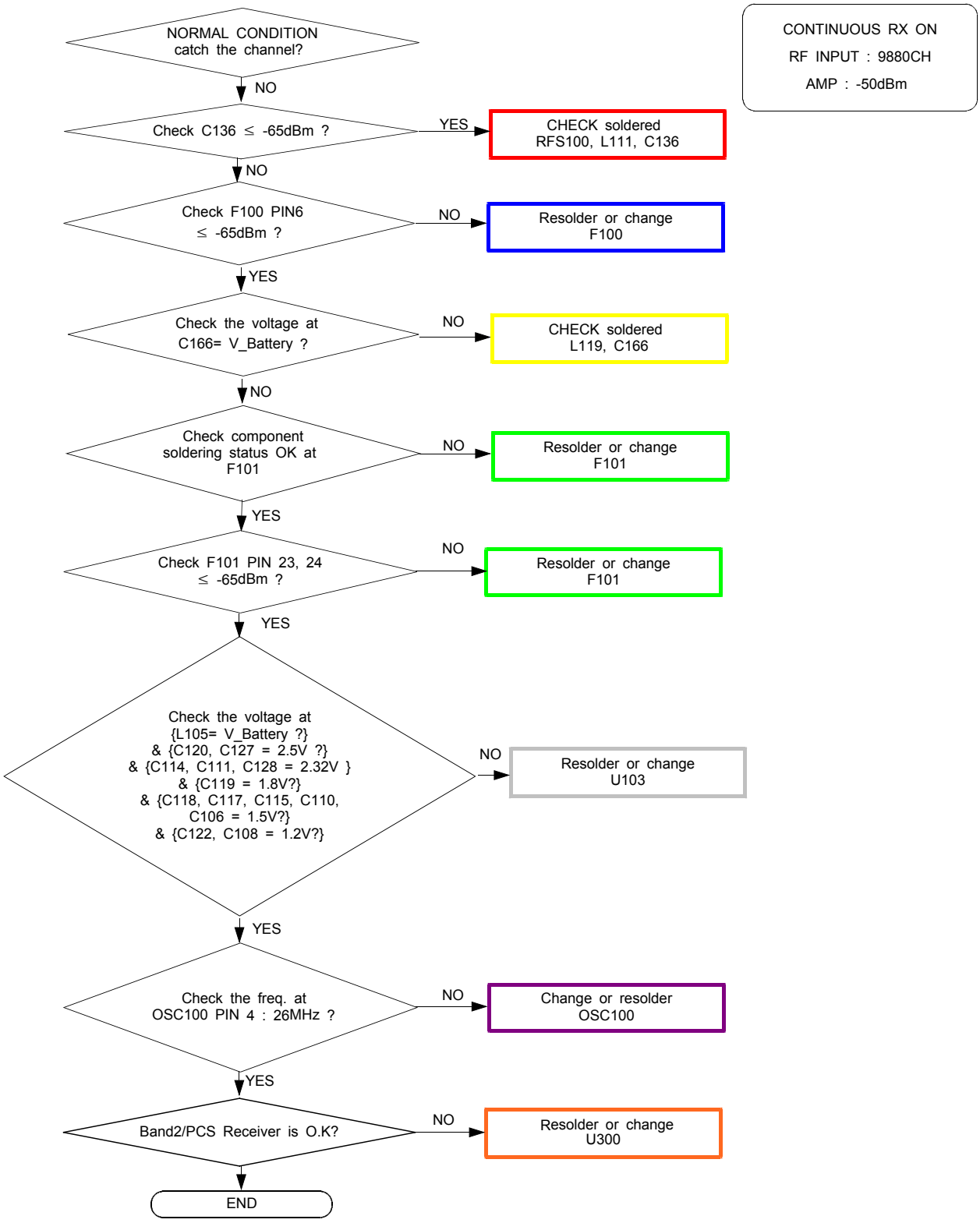
8-3-11. WCDMA Band2 / GSM1900 RX


CONTINUOUS RX ON
RF INPUT : 9880CH
AMP : -50dBm
NORMAL CONDITION catch the channel?
NO
Check C136 ≤ -65dBm ?
YES
CHECK soldered RFS100, L111, C136
NO
Check F100 PIN6 ≤ -65dBm ?
NO
Resolder or change F100
YES
Check the voltage at C166= V_Battery ?
NO
CHECK soldered L119, C166
NO
Check component soldering status OK at F101
NO
Resolder or change F101
YES
Check F101 PIN 23, 24 ≤ -65dBm ?
NO
Resolder or change F101
YES
Check the voltage at {L105= V_Battery ?} & {C120, C127 = 2.5V ?} & {C114, C111, C128 = 2.32V } & {C119 = 1.8V?} & {C118, C117, C115, C110, C106 = 1.5V?} & {C122, C108 = 1.2V?}
NO
Resolder or change U103
YES
Check the freq. at OSC100 PIN 4 : 26MHz ?
NO
Change or resolder OSC100
YES
Band2/PCS Receiver is O.K?
NO
Resolder or change U300
END

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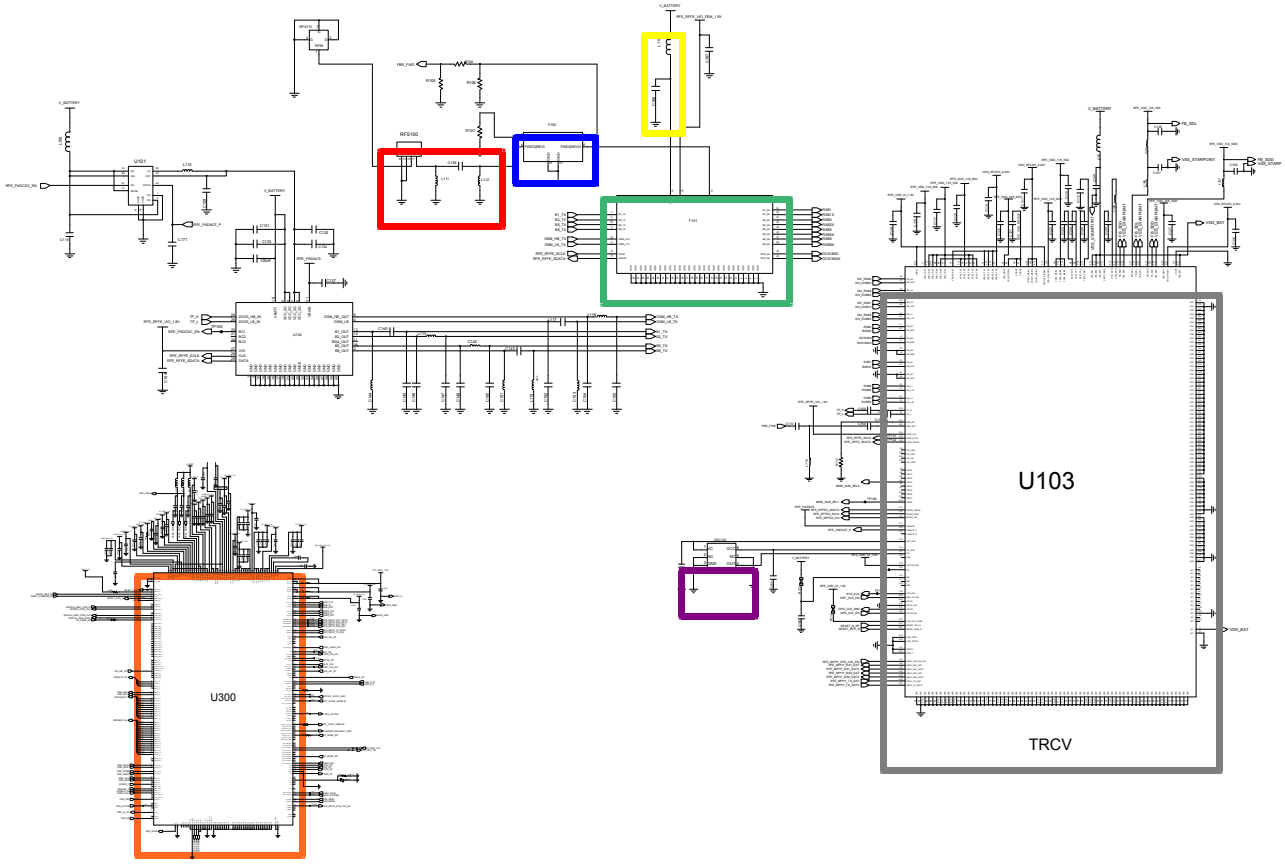

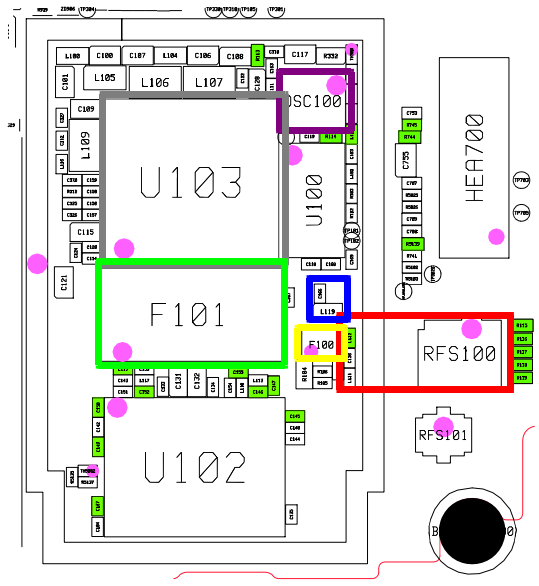

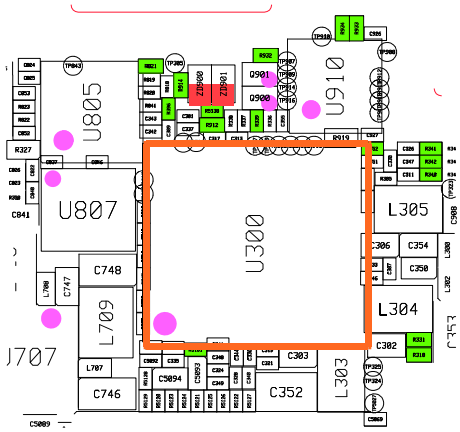

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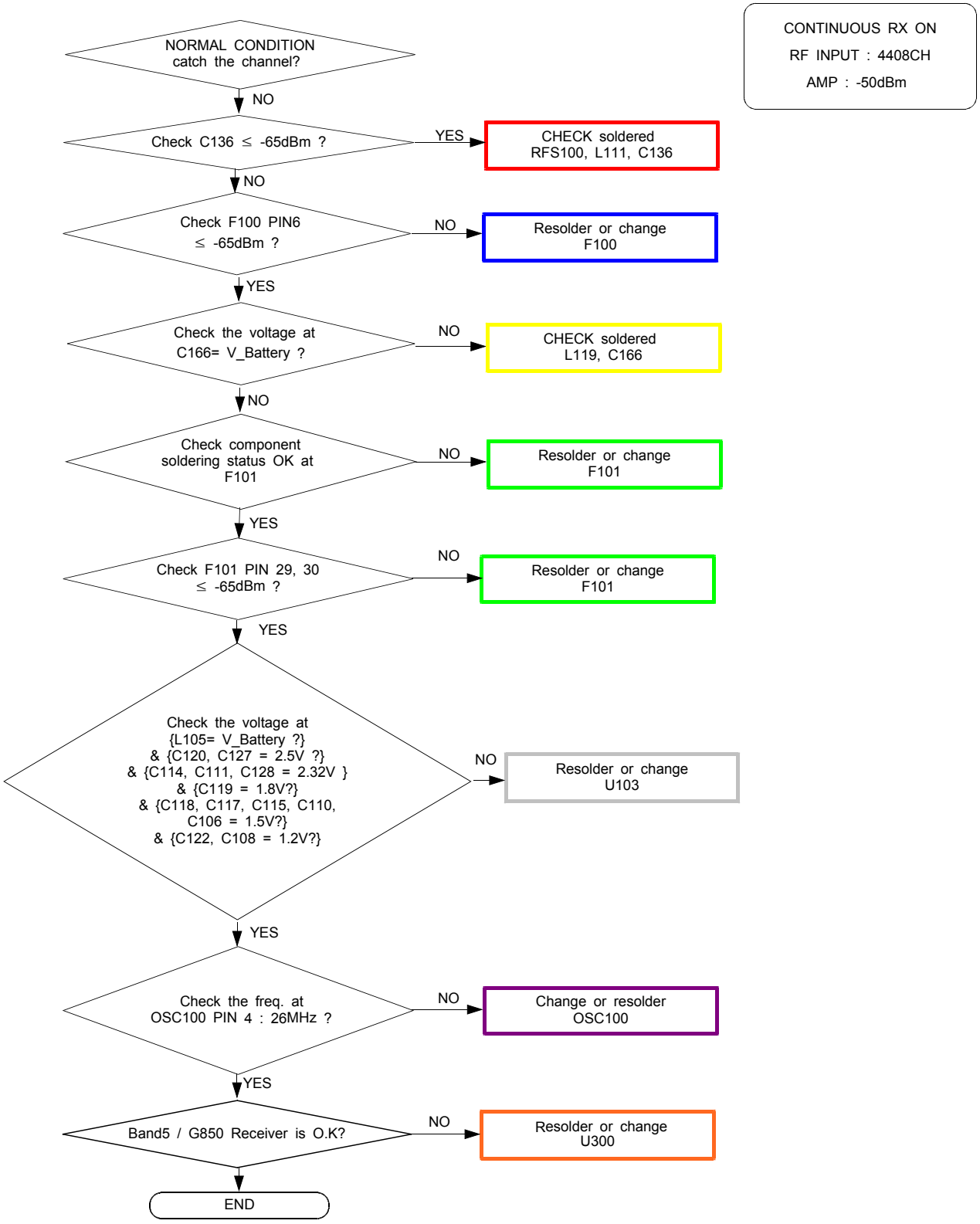
8-3-12. WCDMA Band5 / GSM 850 RX


CONTINUOUS RX ON
RF INPUT : 4408CH
AMP : -50dBm
NORMAL CONDITION catch the channel?
NO
Check C136 ≤ -65dBm ?
YES
CHECK soldered RFS100, L111, C136
NO
Check F100 PIN6 ≤ -65dBm ?
NO
Resolder or change F100
YES
Check the voltage at C166= V_Battery ?
NO
CHECK soldered L119, C166
NO
Check component soldering status OK at F101
NO
Resolder or change F101
YES
Check F101 PIN 29, 30 ≤ -65dBm ?
NO
Resolder or change F101
YES
Check the voltage at {L105= V_Battery ?} & {C120, C127 = 2.5V ?} & {C114, C111, C128 = 2.32V } & {C119 = 1.8V?} & {C118, C117, C115, C110, C106 = 1.5V?} & {C122, C108 = 1.2V?}
NO
Resolder or change U103
YES
Check the freq. at OSC100 PIN 4 : 26MHz ?
NO
Change or resolder OSC100
YES
Band5 / G850 Receiver is O.K?
NO
Resolder or change U300
END

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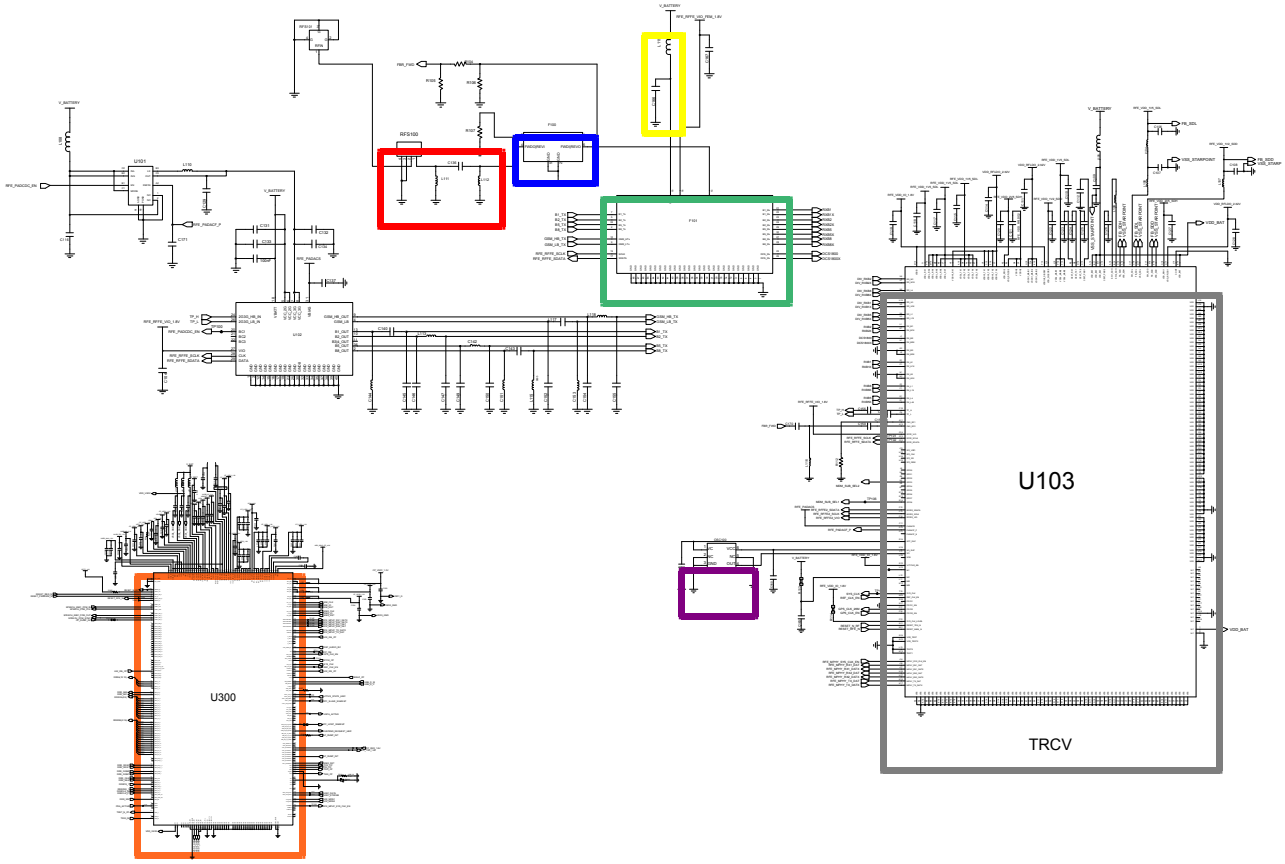

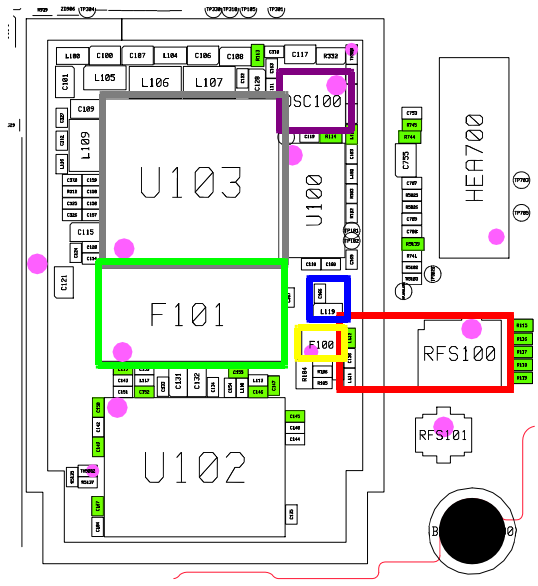

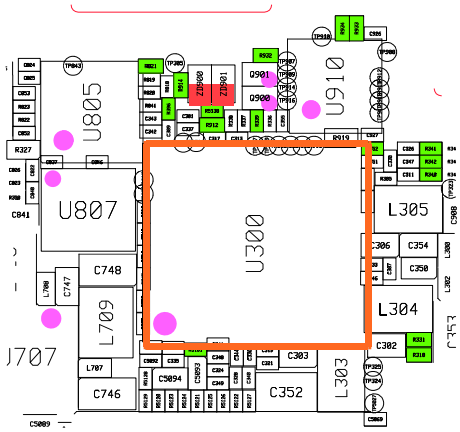

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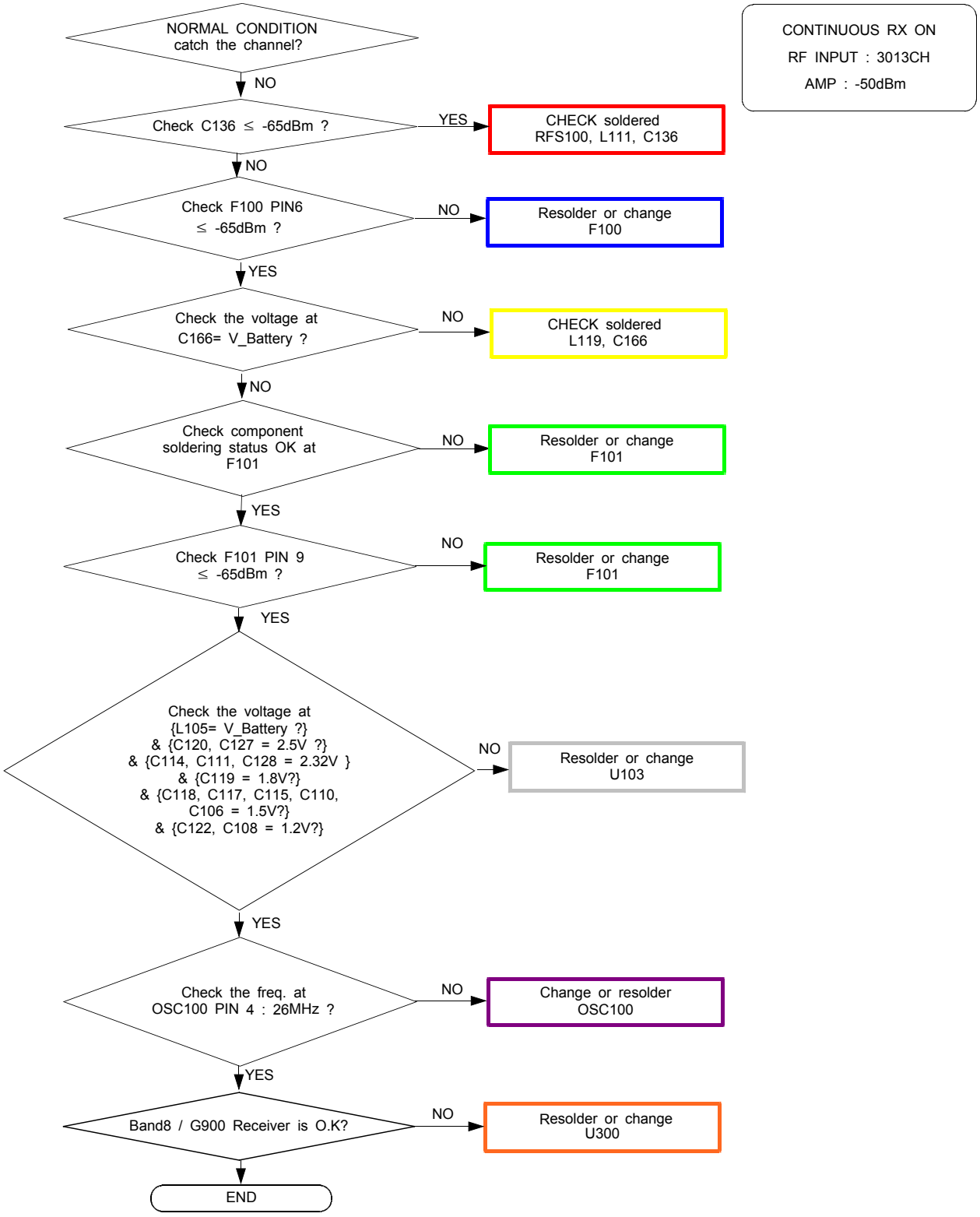
8-3-13. WCDMA Band8 / GSM900 RX


CONTINUOUS RX ON
RF INPUT : 3013CH
AMP : -50dBm
NORMAL CONDITION catch the channel?
NO
Check C136 ≤ -65dBm ?
YES
CHECK soldered RFS100, L111, C136
NO
Check F100 PIN6 ≤ -65dBm ?
NO
Resolder or change F100
YES
Check the voltage at C166= V_Battery ?
NO
CHECK soldered L119, C166
NO
Check component soldering status OK at F101
NO
Resolder or change F101
YES
Check F101 PIN 9 ≤ -65dBm ?
NO
Resolder or change F101
YES
Check the voltage at {L105= V_Battery ?} & {C120, C127 = 2.5V ?} & {C114, C111, C128 = 2.32V } & {C119 = 1.8V?} & {C118, C117, C115, C110, C106 = 1.5V?} & {C122, C108 = 1.2V?}
NO
Resolder or change U103
YES
Check the freq. at OSC100 PIN 4 : 26MHz ?
NO
Change or resolder OSC100
YES
Band8 / G900 Receiver is O.K?
NO
Resolder or change U300
END

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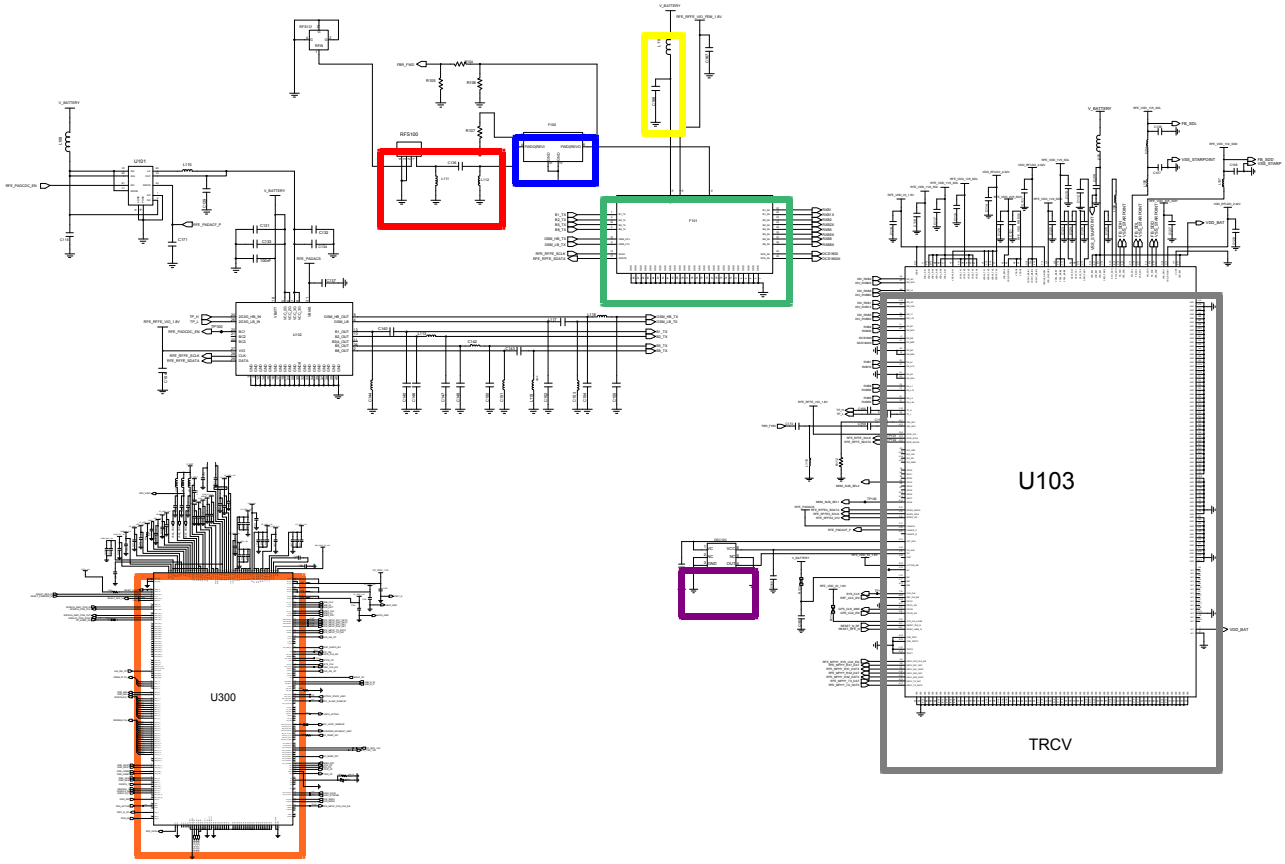

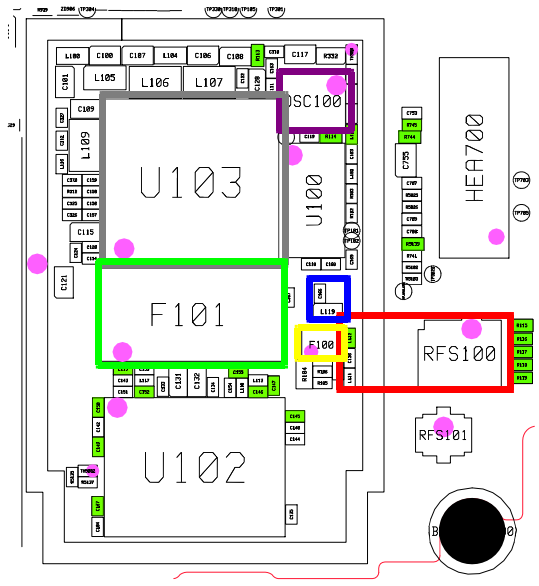

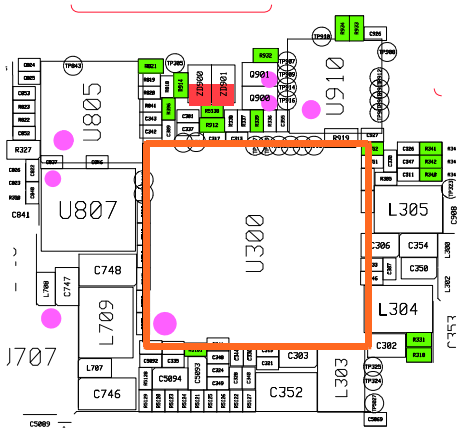

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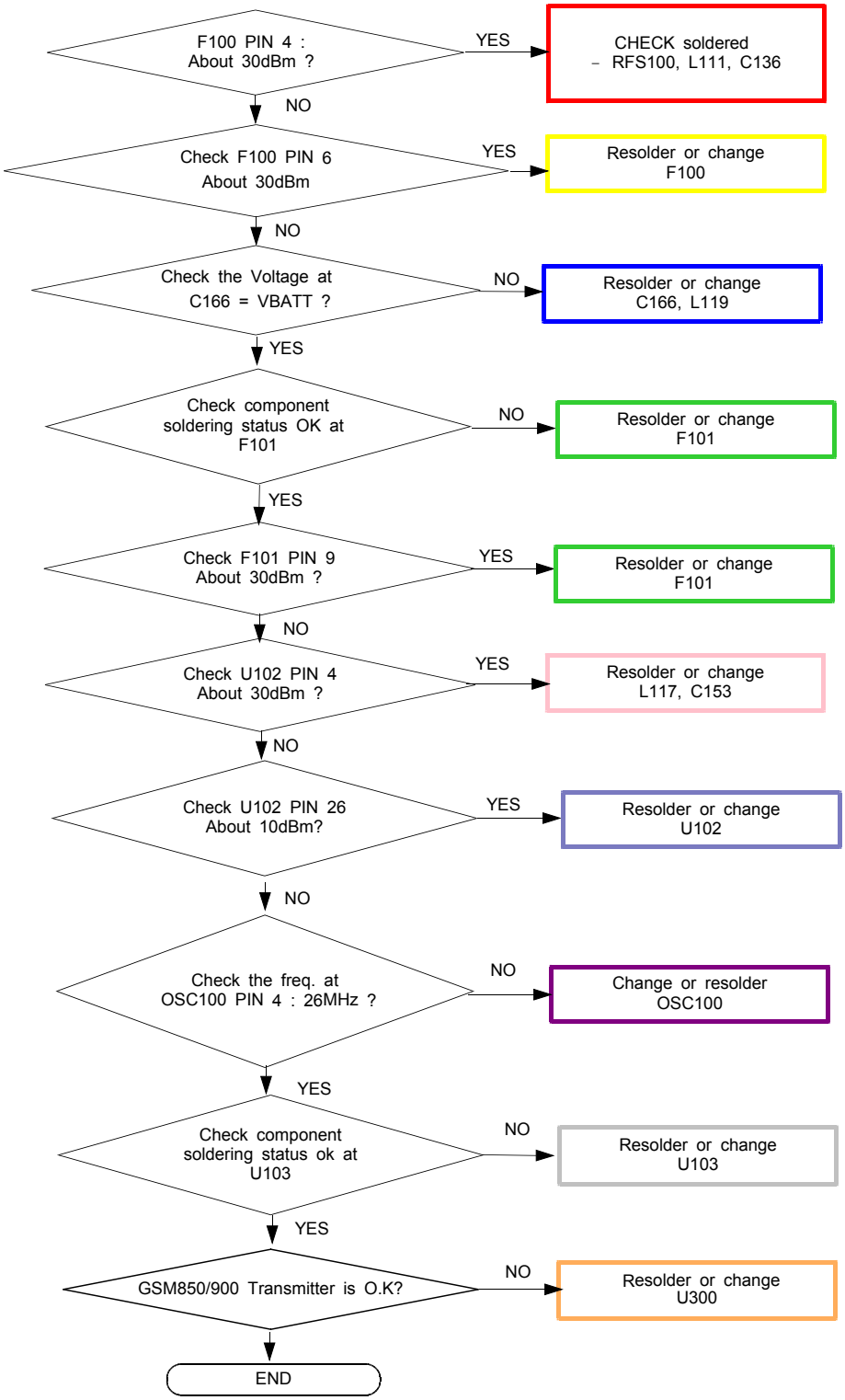
8-3-14. GSM850/GSM900 TX

CONTINUOUS TX ON CONDITION
TX POWER IDX1 APPLIED
GSM850 CH : 190
GSM900 CH : 62
RBW : 100KHz
VBW : 100KHz
SPAN : 10MHz
REF LEV. : 10dBm
ATT. : 20dB



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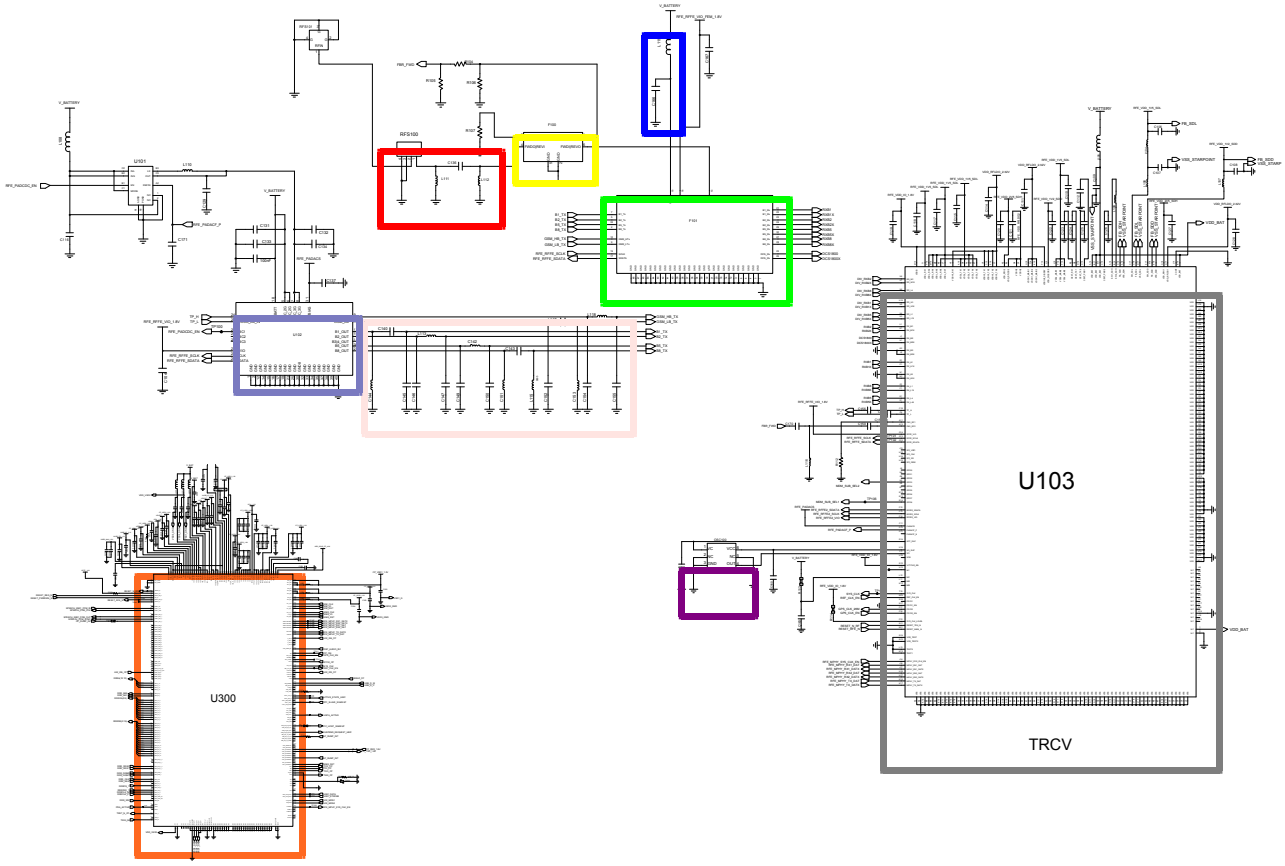

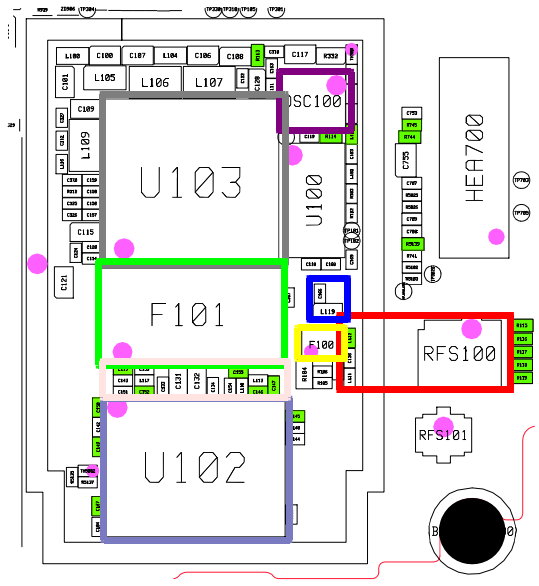

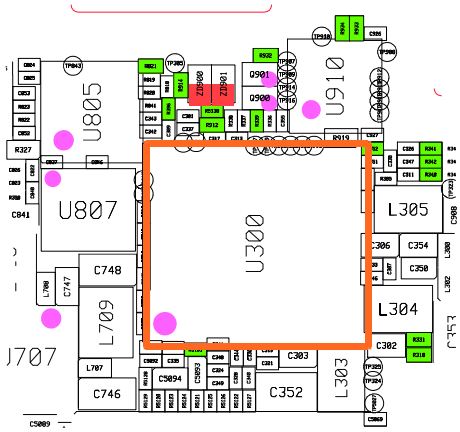

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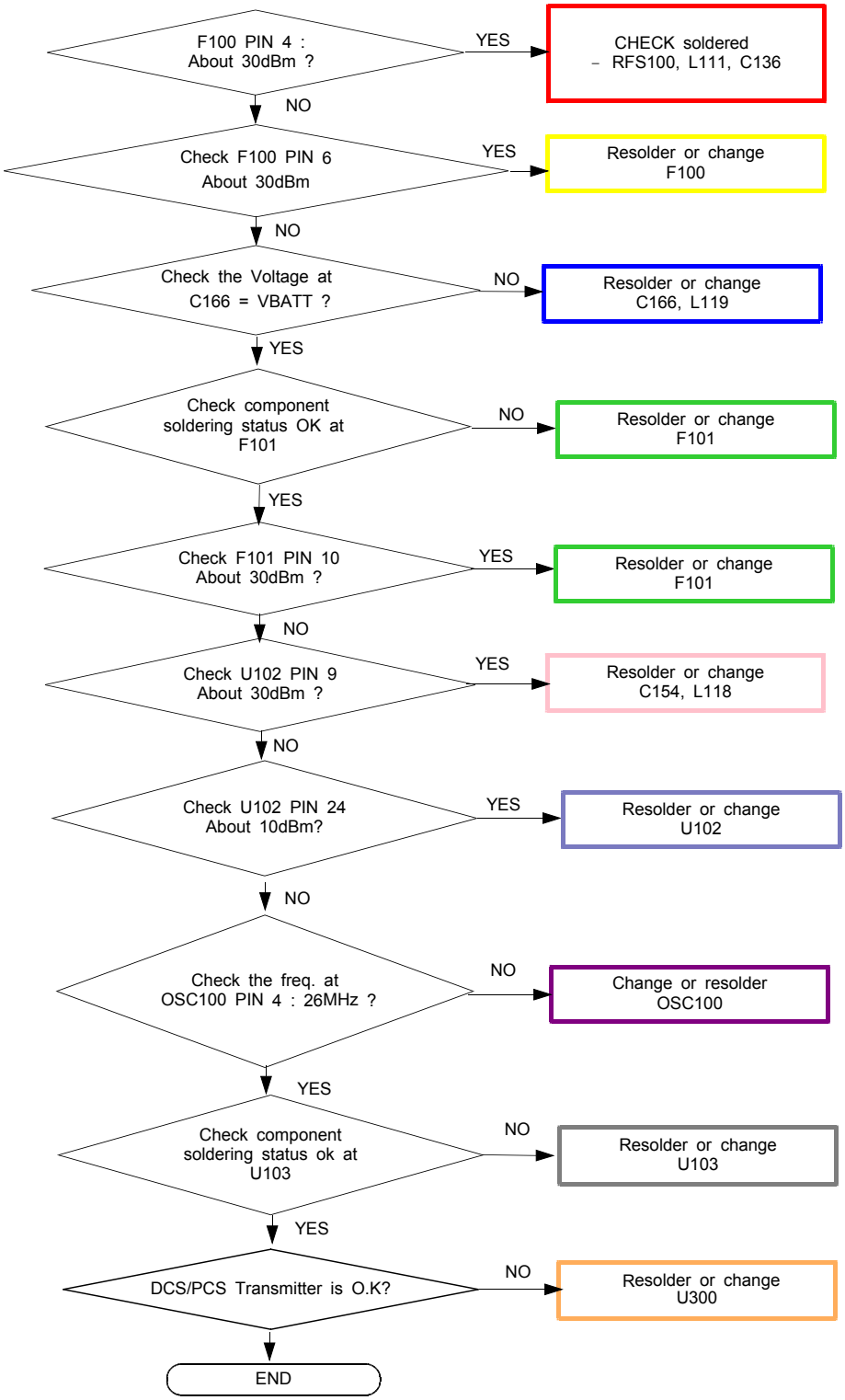
8-3-15. DCS/PCS TX

CONTINUOUS TX ON CONDITION
TX POWER IDX1 APPLIED
DCS CH : 685
PCS CH : 661
RBW : 100KHz
VBW : 100KHz
SPAN : 10MHz
REF LEV. : 10dBm
ATT. : 20dB



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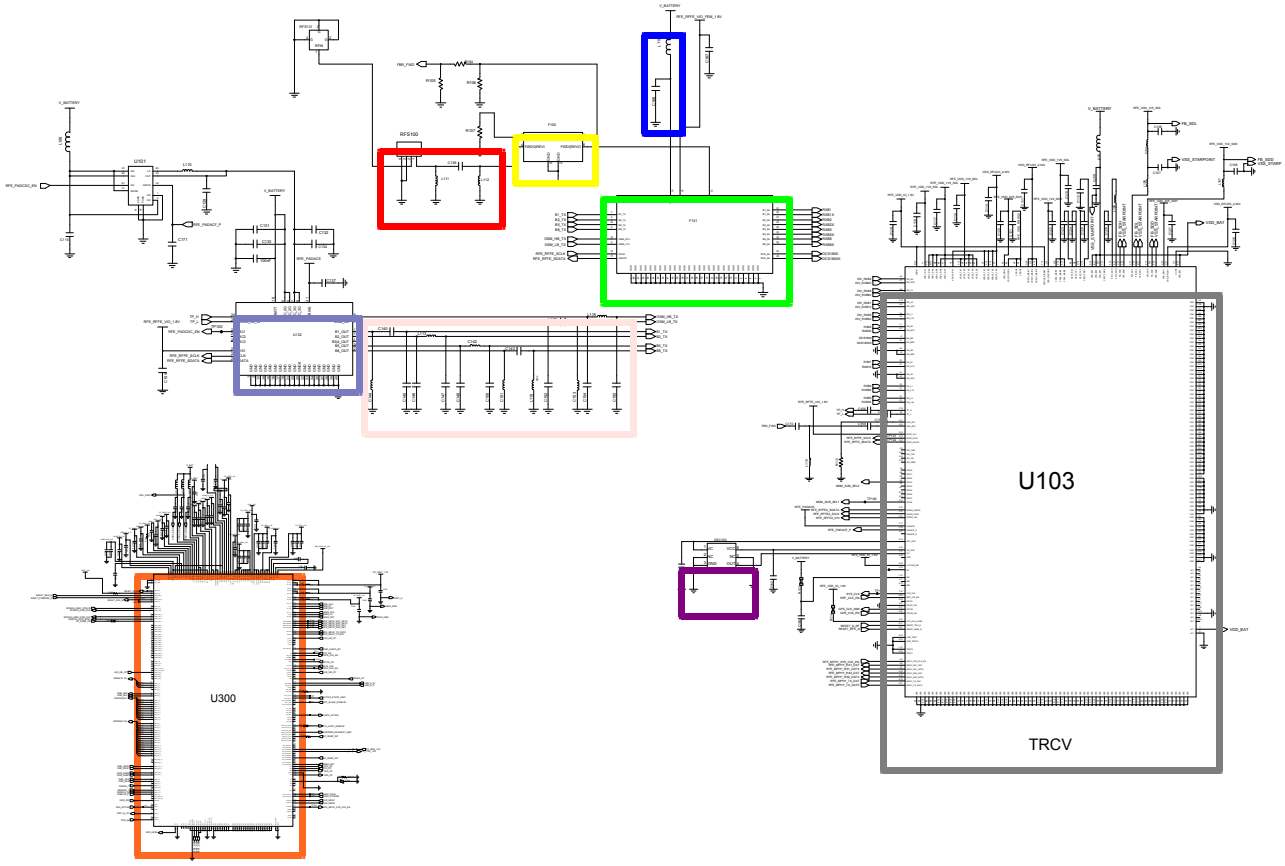

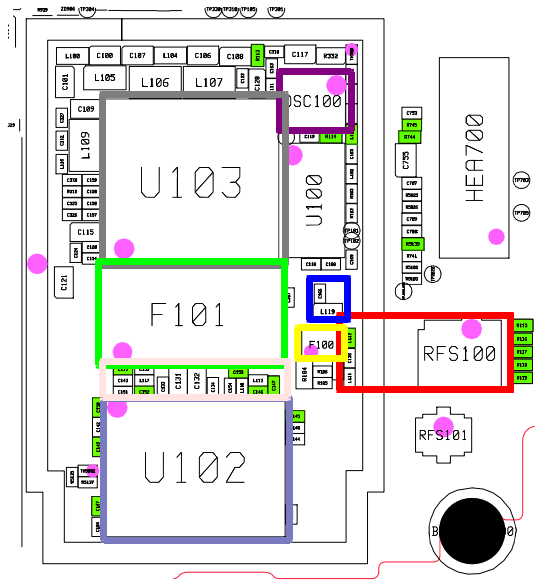

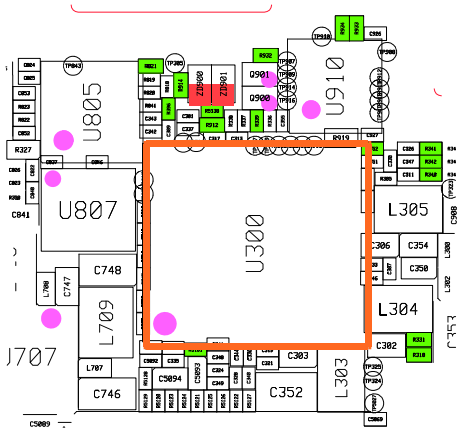

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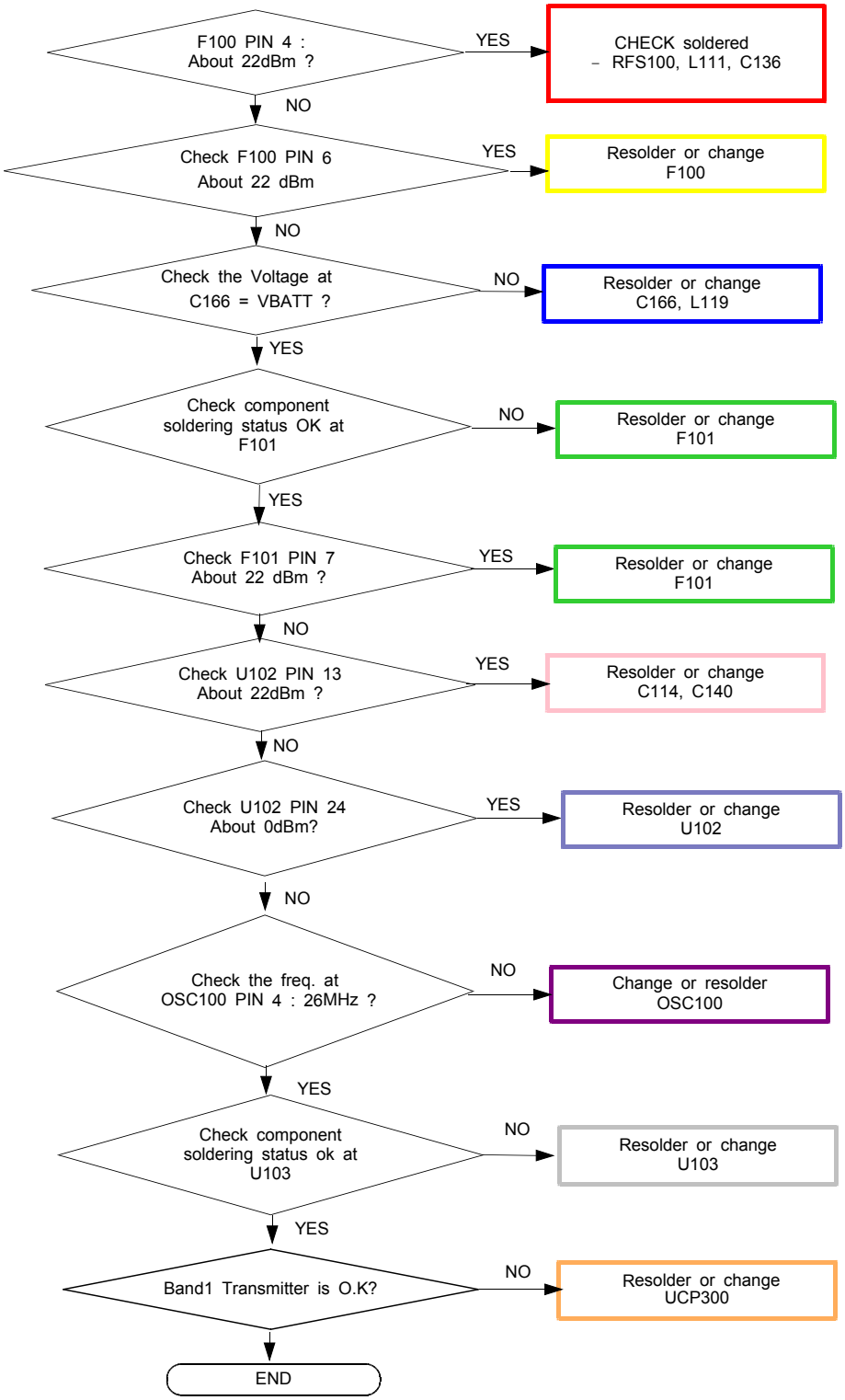
8-3-16. WCDMA BAND1 TX

CONTINUOUS TX ON CONDITION
TX POWER DAC:14500 CODE APPLIED
WCDMA Band1 CH : 20000
RBW : 100KHz
VBW : 100KHz
SPAN : 10MHz
REF LEV. : 10dBm
ATT. : 20dB



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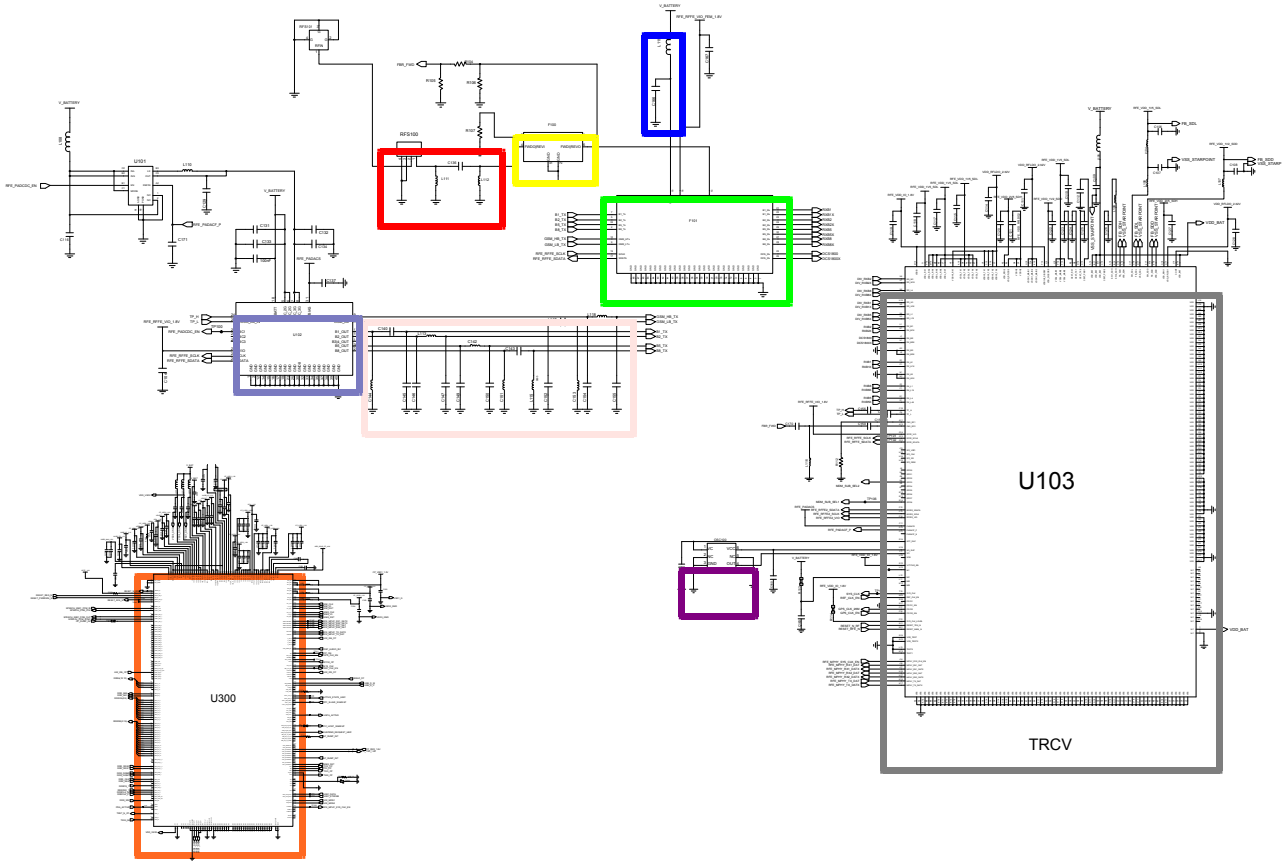

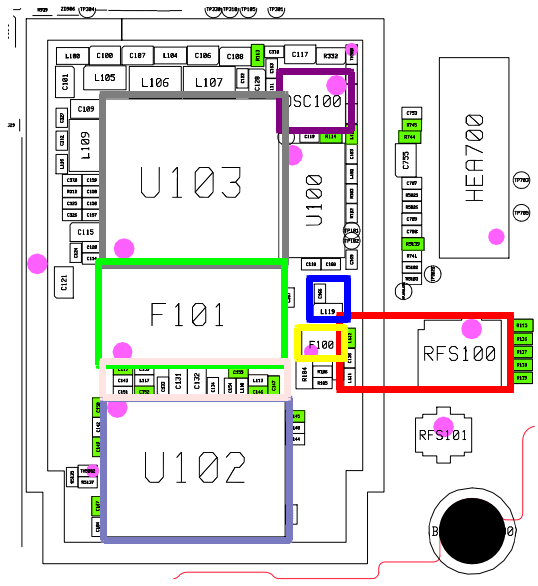

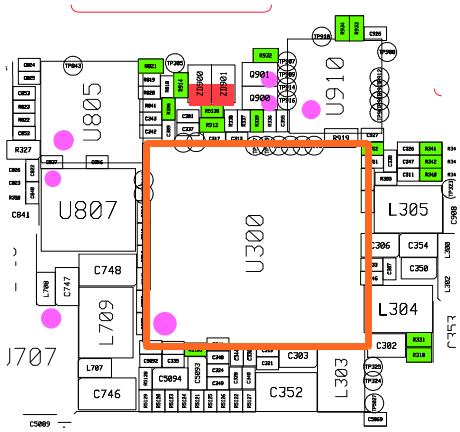

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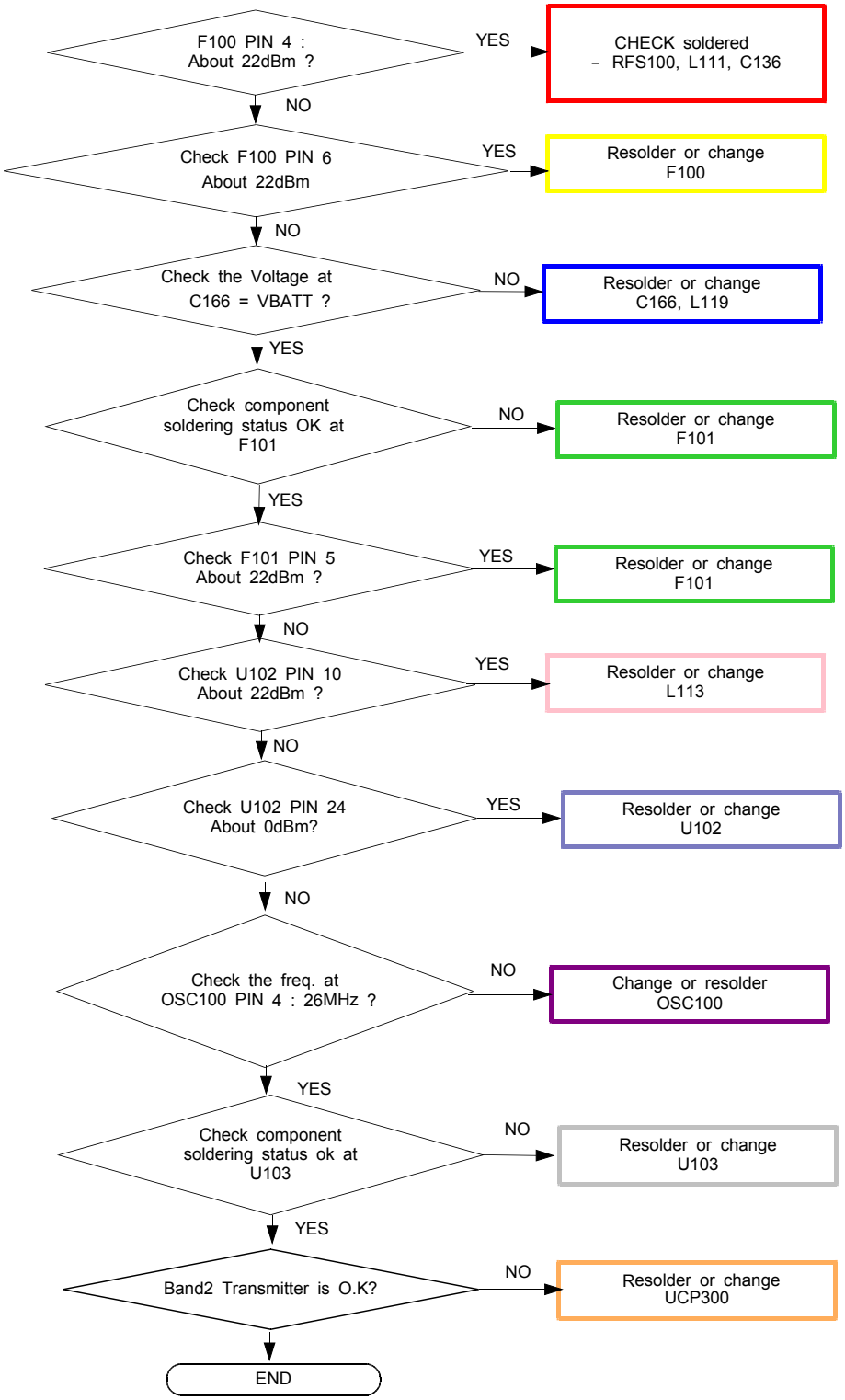
8-3-17. WCDMA BAND2 TX

CONTINUOUS TX ON CONDITION
TX POWER DAC:23000 CODE APPLIED
WCDMA Band2 CH : 9880
RBW : 100KHz
VBW : 100KHz
SPAN : 10MHz
REF LEV. : 10dBm
ATT. : 20dB



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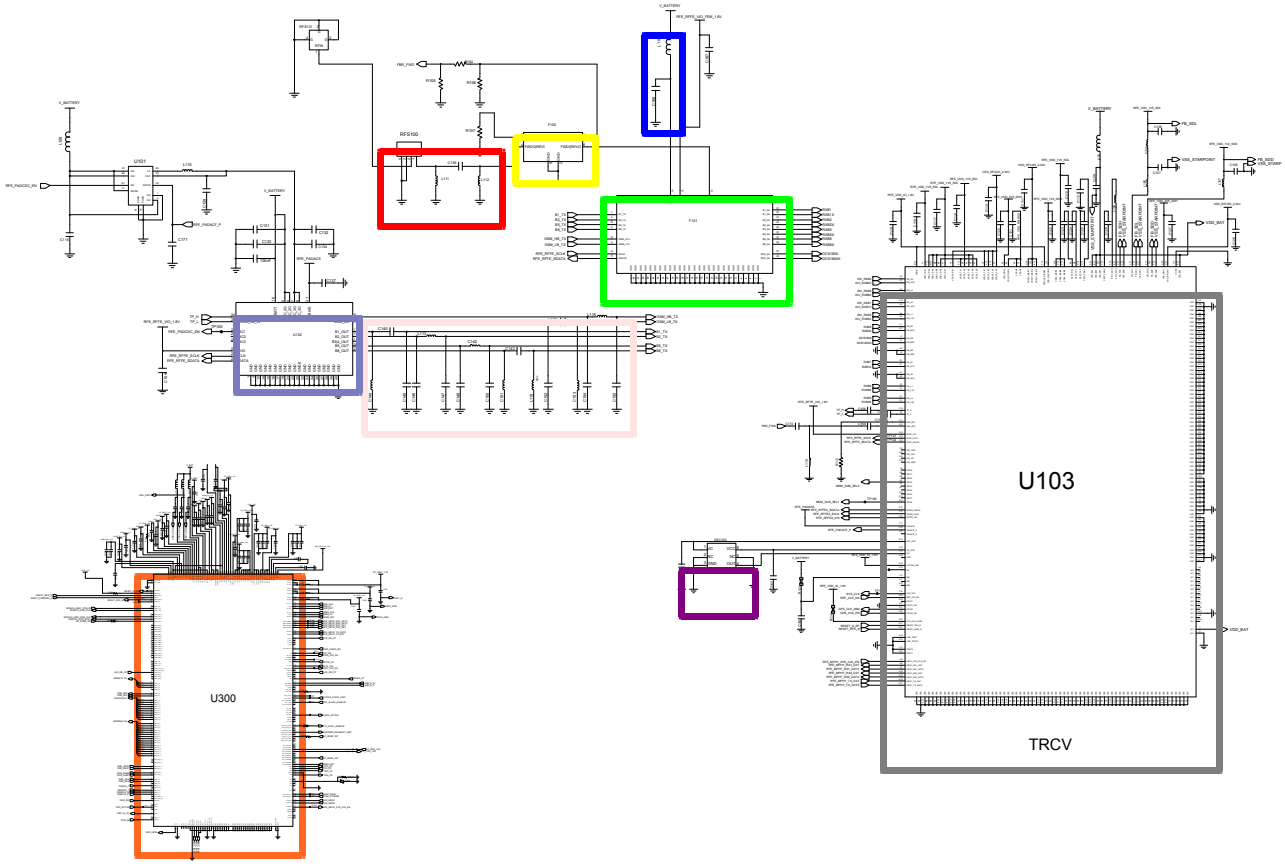

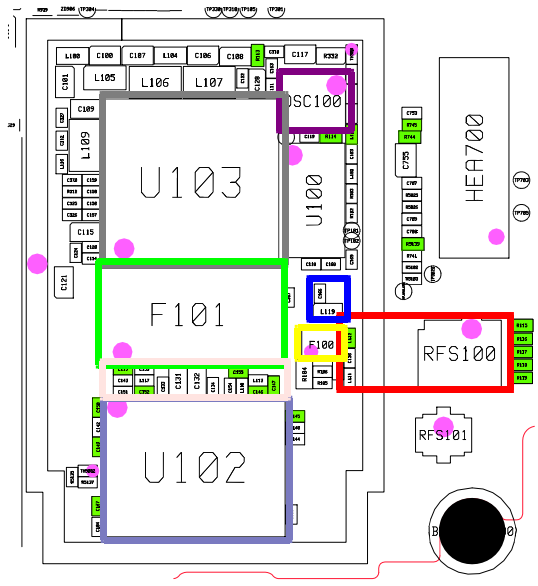

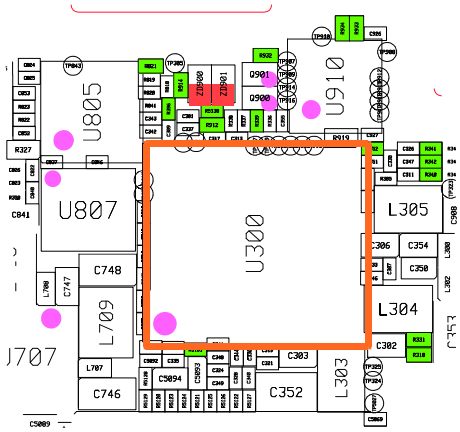

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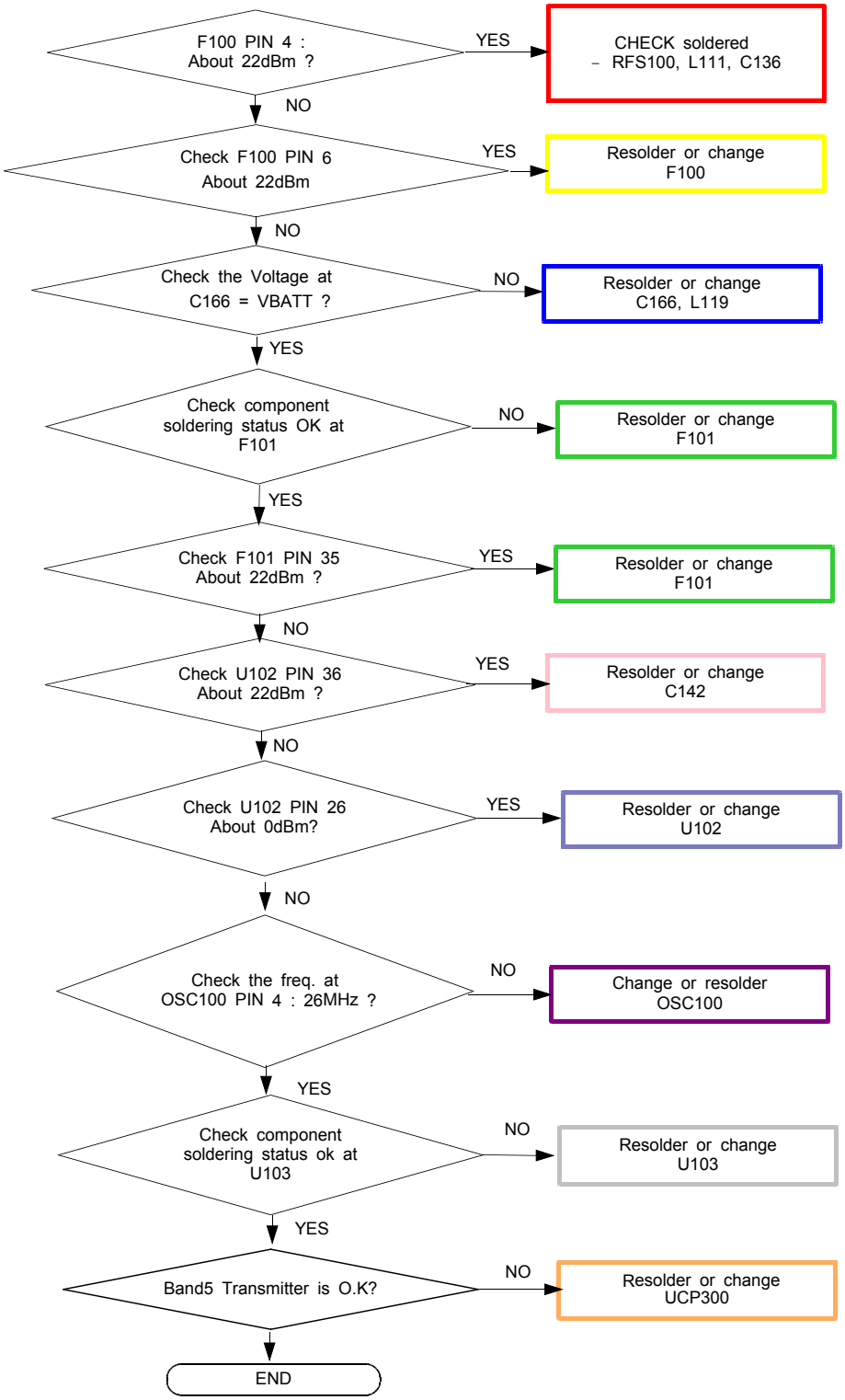
8-3-18. WCDMA BAND5 TX

CONTINUOUS TX ON CONDITION
TX POWER DAC: 23000 CODE APPLIED
WCDMA Band5 CH : 4408
RBW : 100KHz
VBW : 100KHz
SPAN : 10MHz
REF LEV. : 10dBm
ATT. : 20dB



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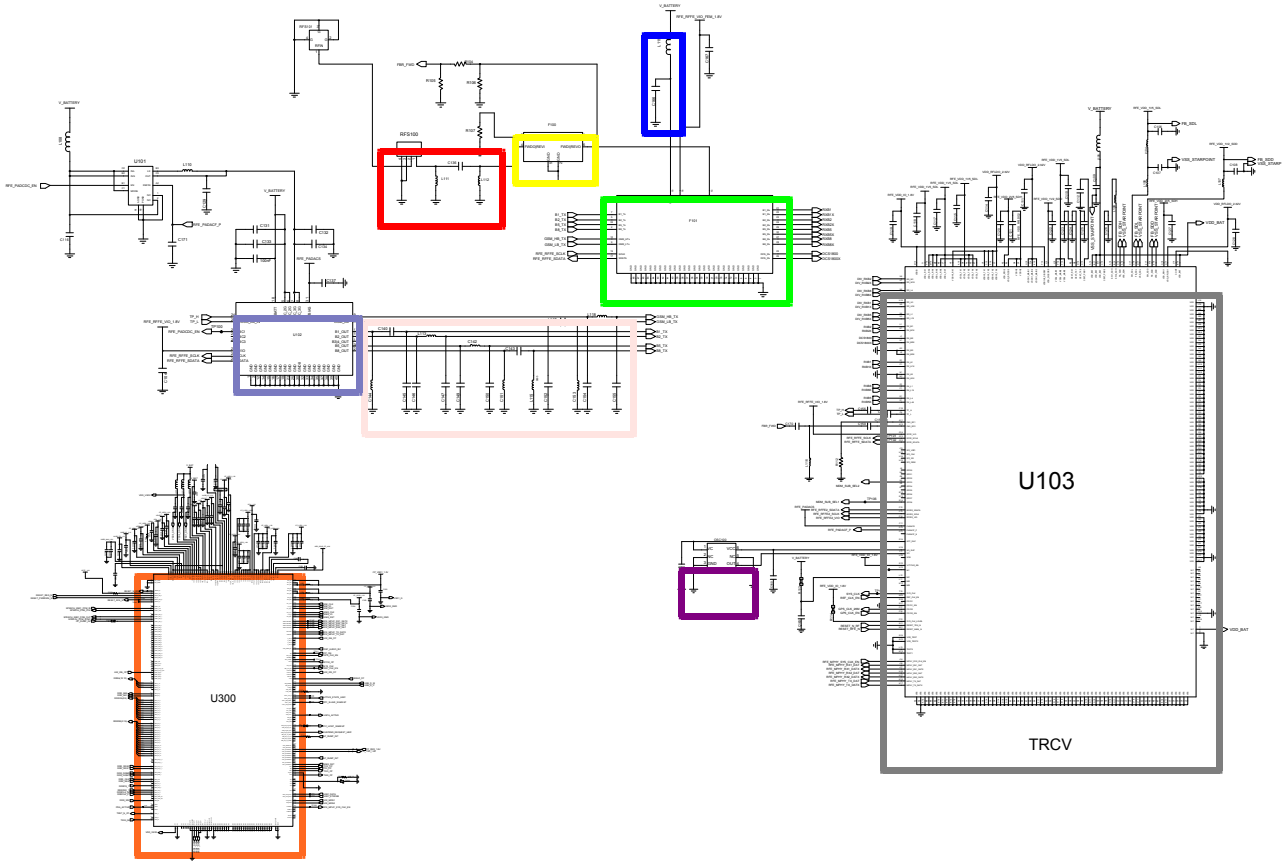

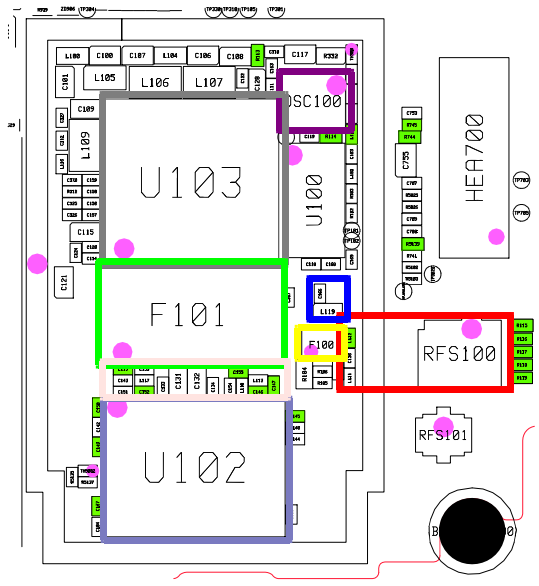

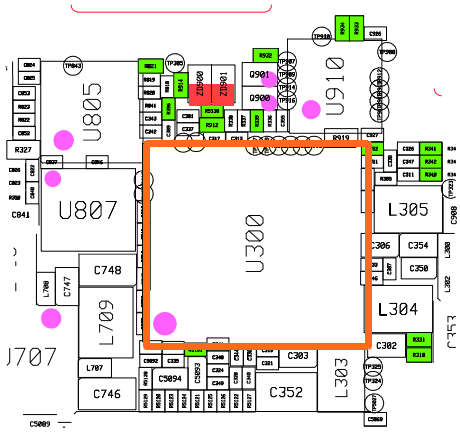

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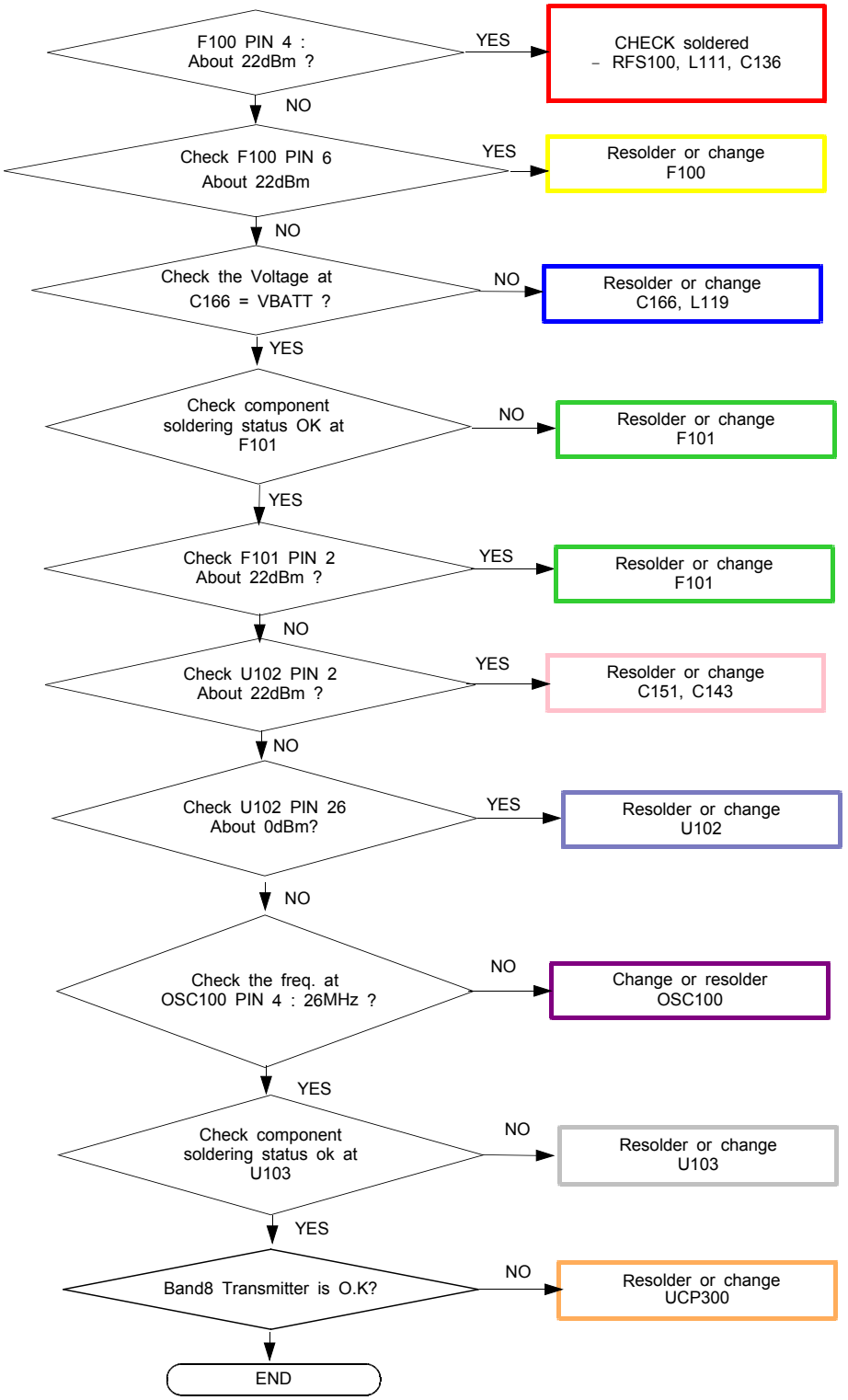
8-3-19. WCDMA BAND8 TX

CONTINUOUS TX ON CONDITION
TX POWER DAC: 23000 CODE APPLIED
WCDMA Band8 CH : 3013
RBW : 100KHz
VBW : 100KHz
SPAN : 10MHz
REF LEV. : 10dBm
ATT. : 20dB



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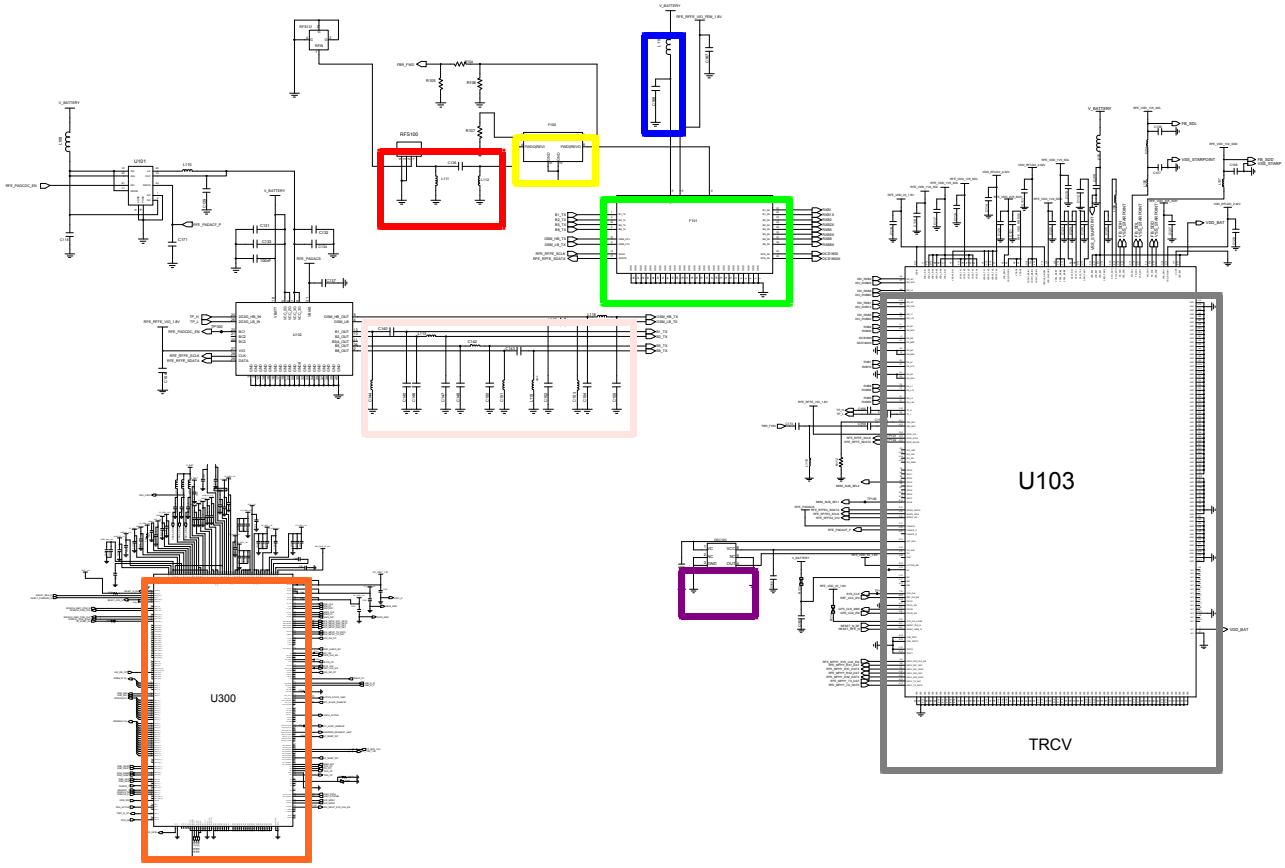

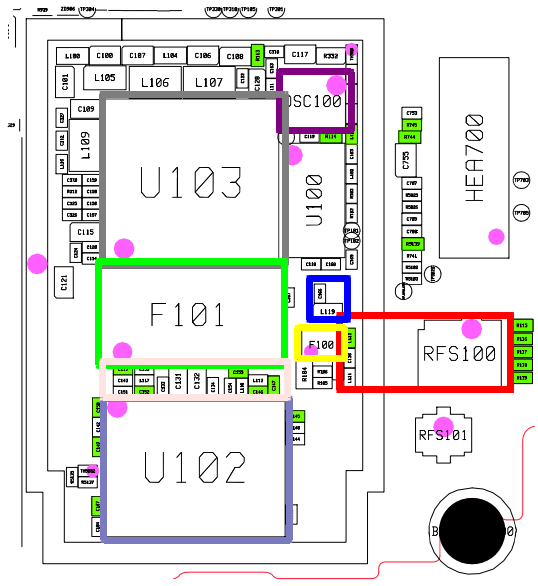

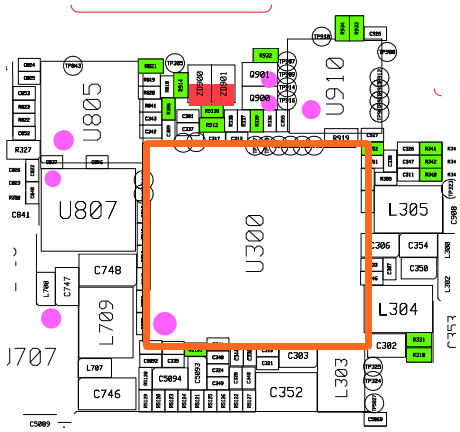

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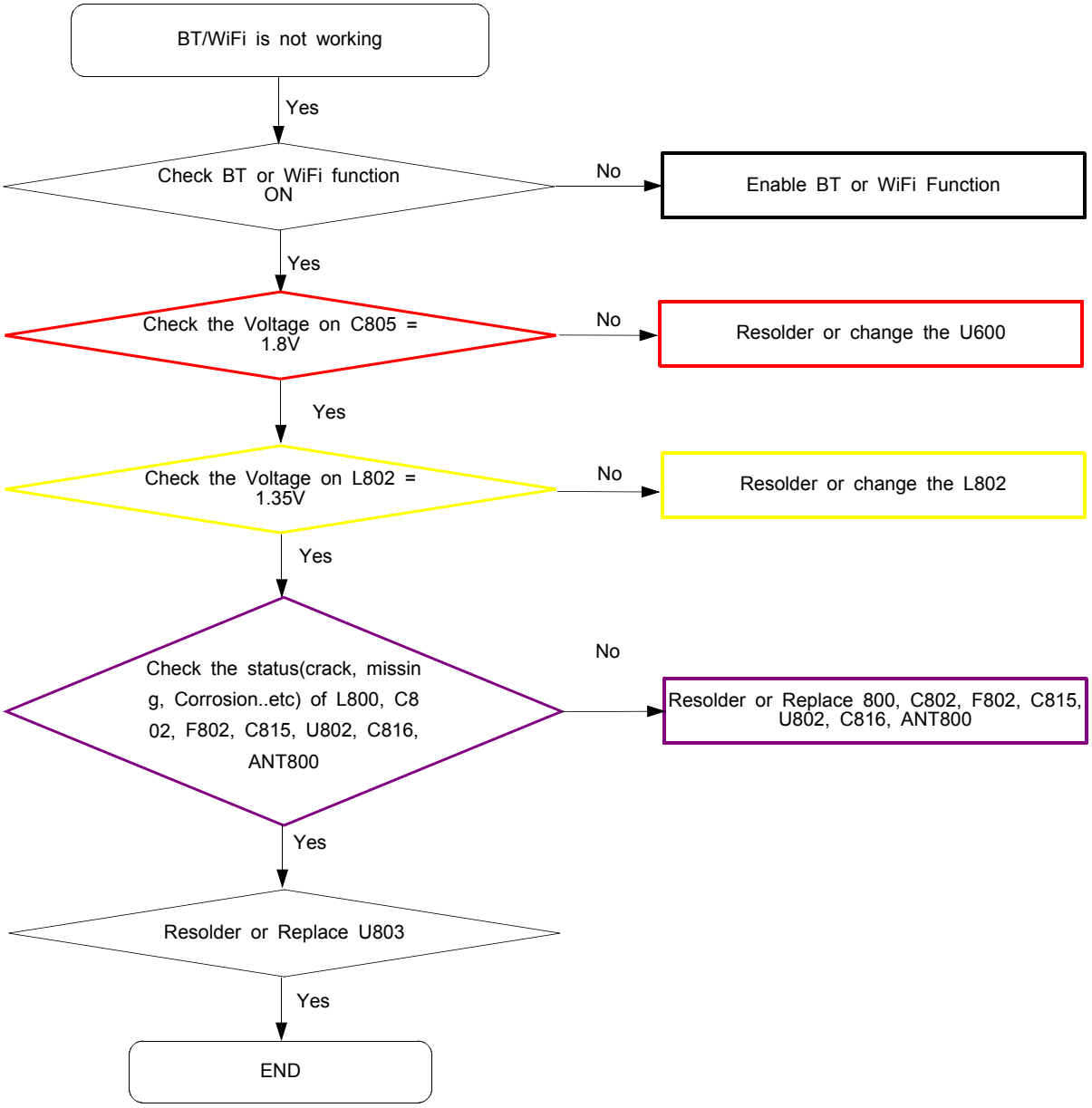
8-3-9. BT/WIFI



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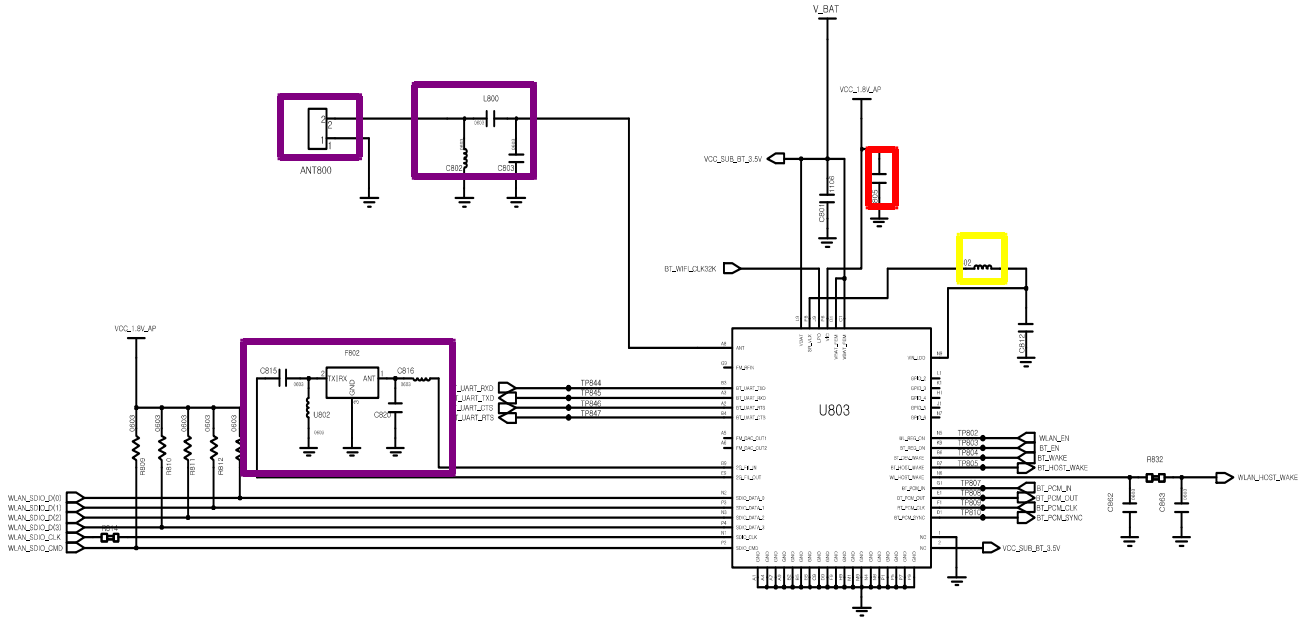

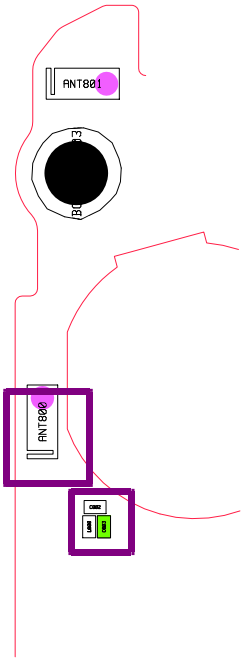

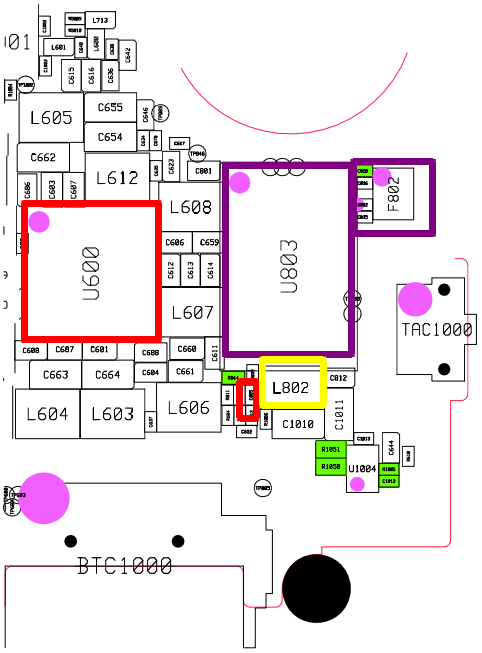

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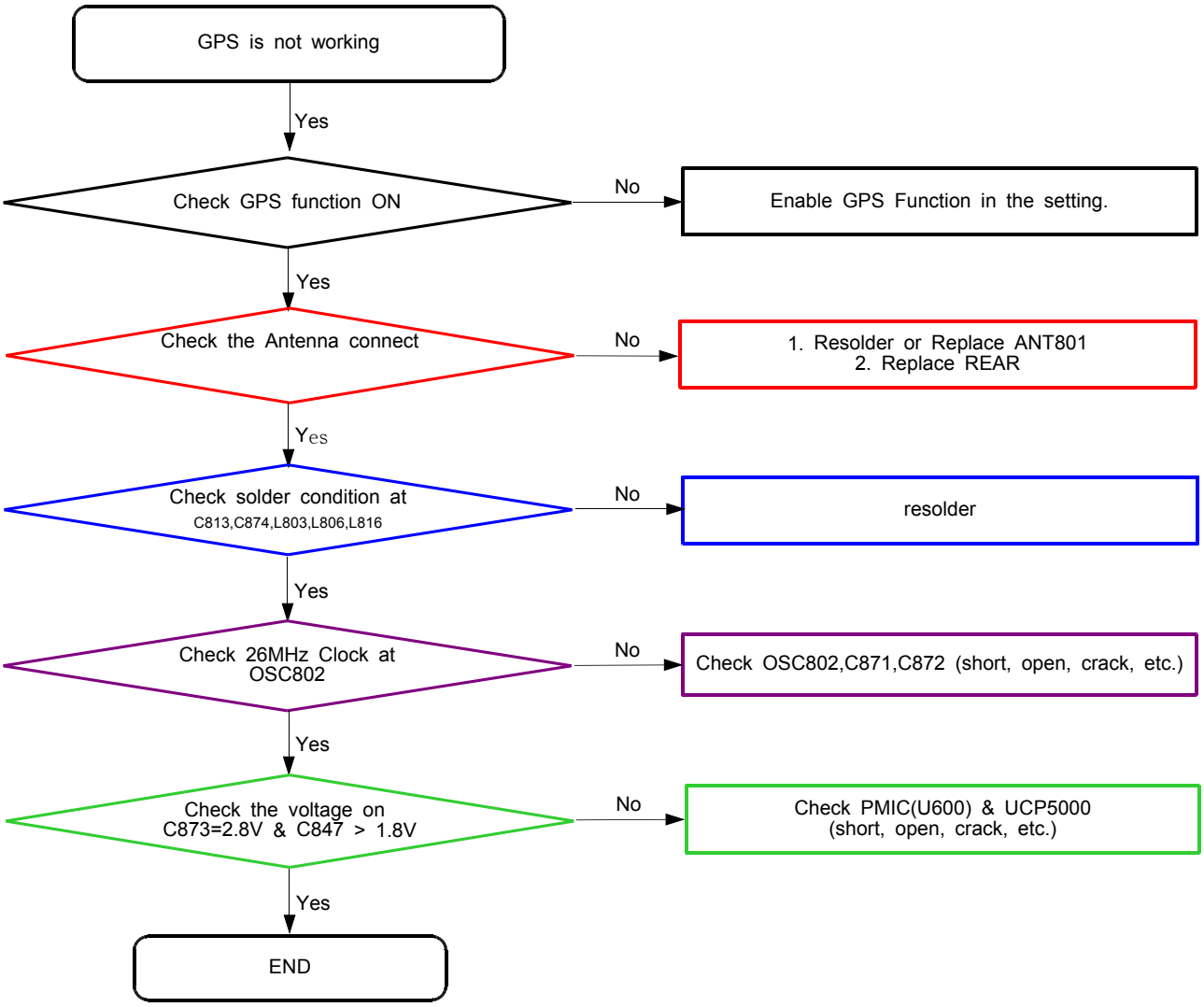
8-4-22. GPS



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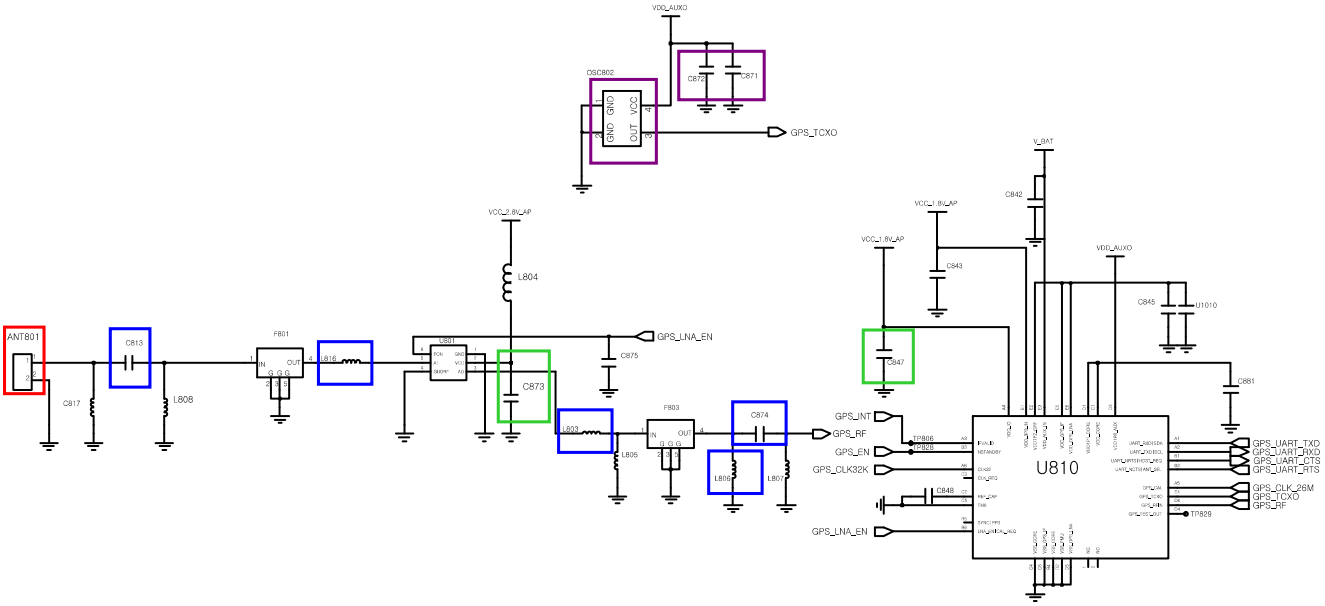

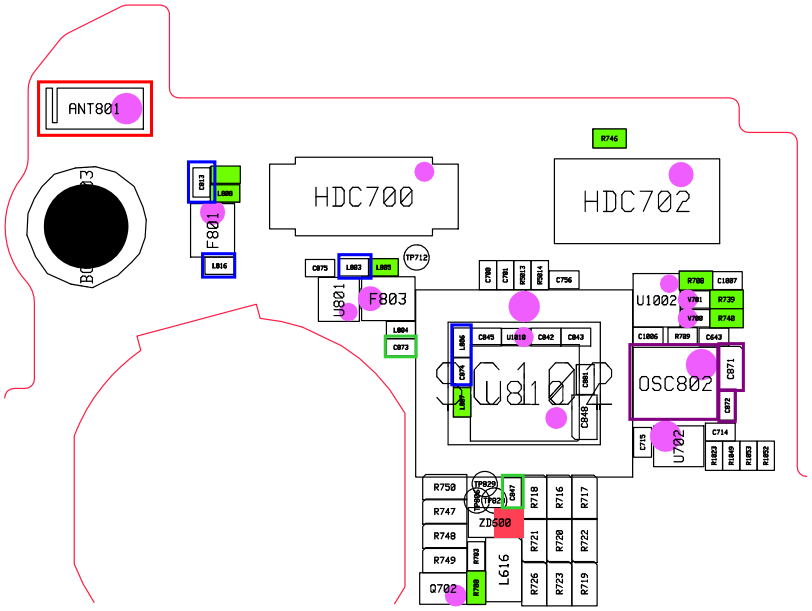

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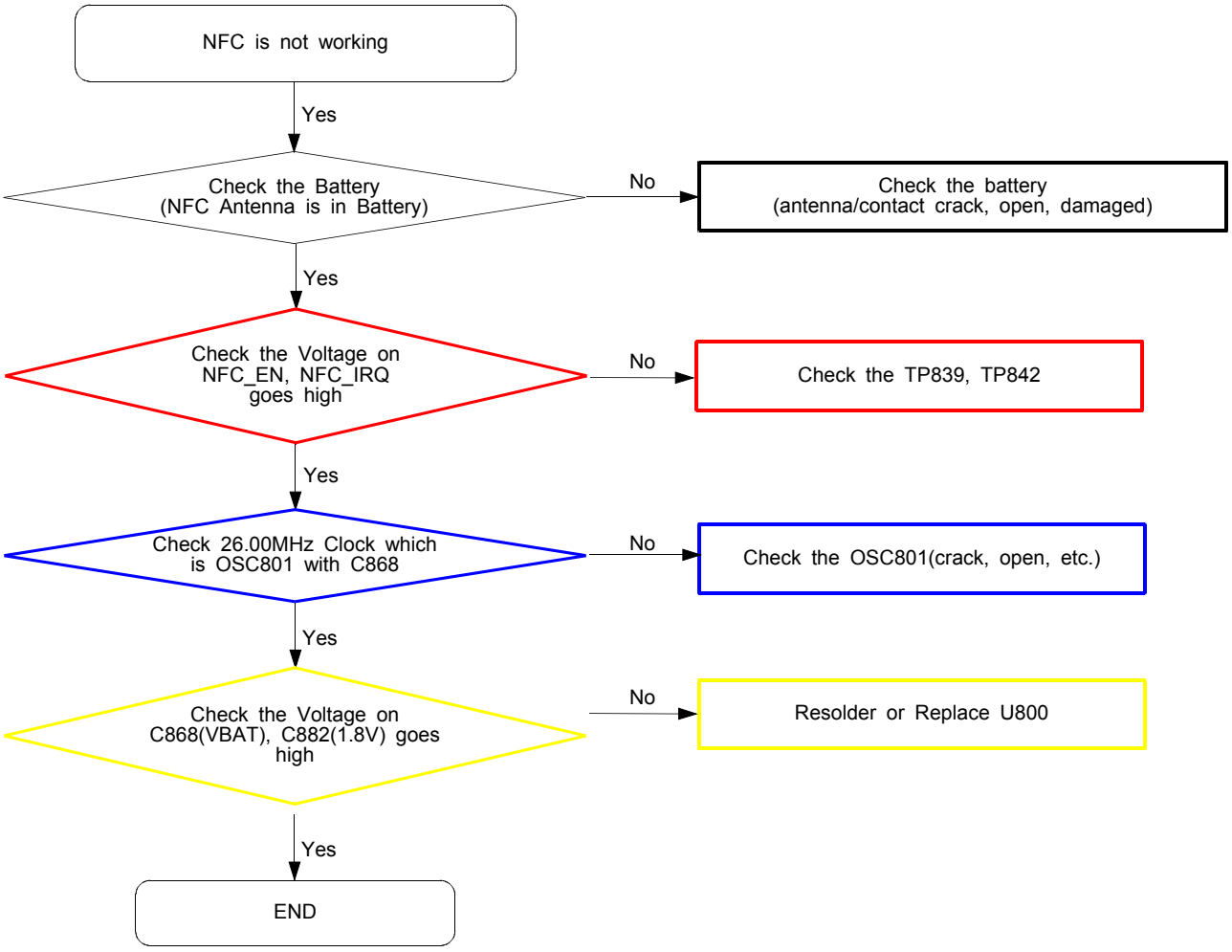
8-3-23. NFC



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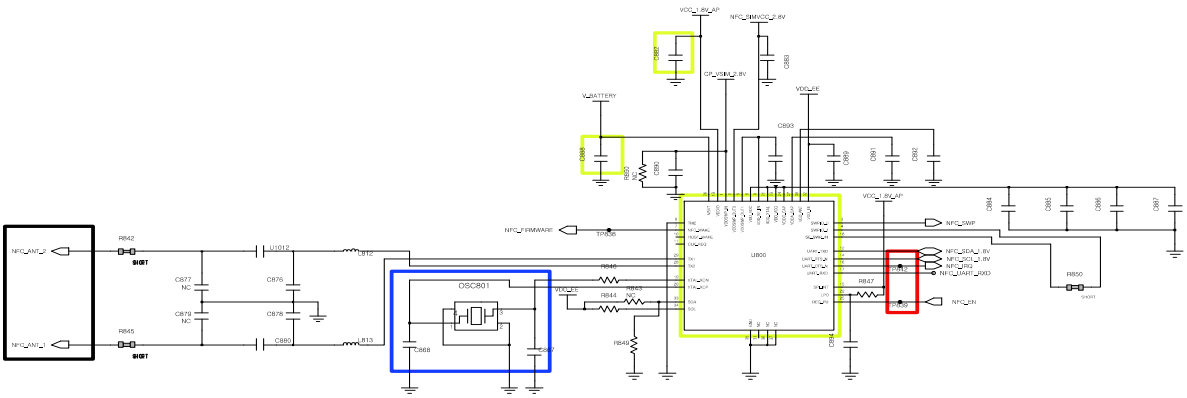

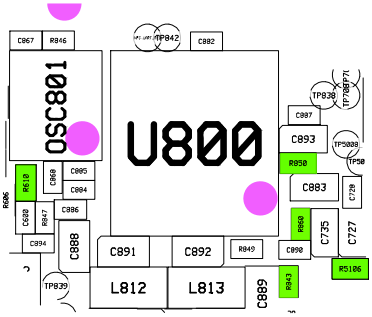

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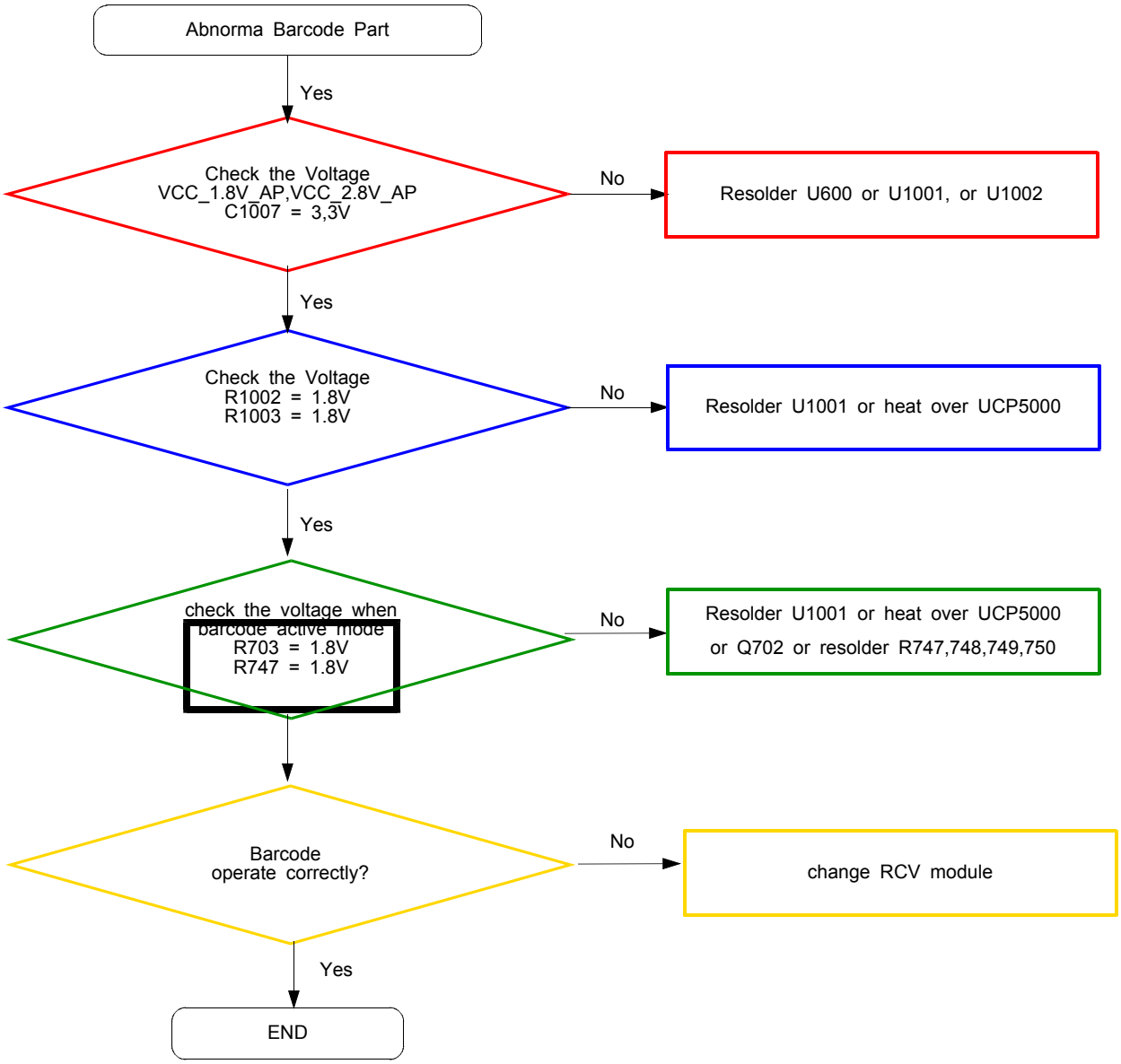
8-3-24.Sensor Part

1. Barcode emulator



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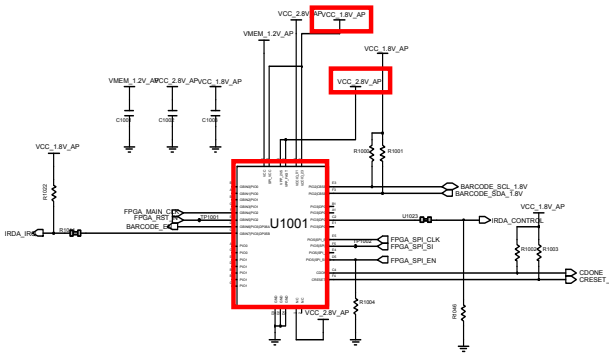
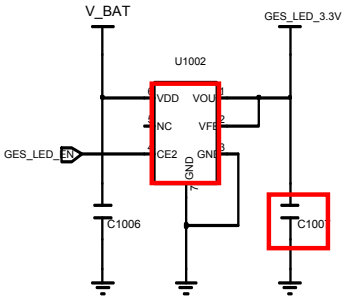
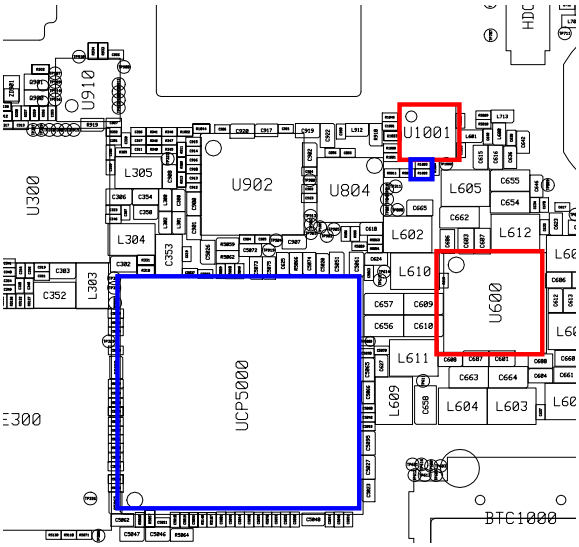
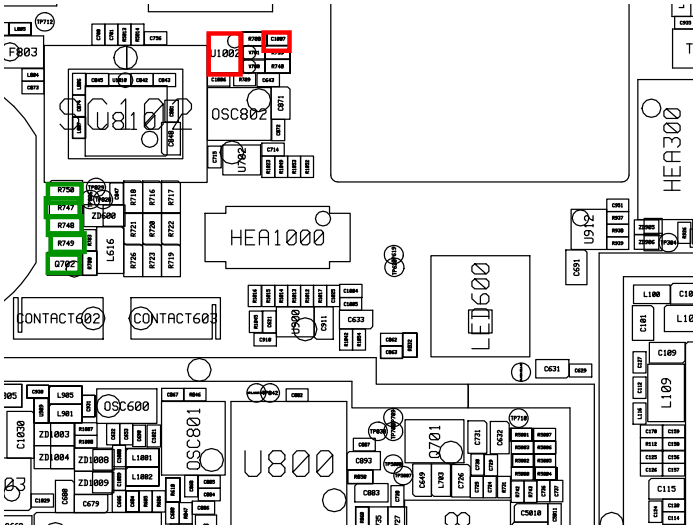




BAR CODER

Gesture Sensor





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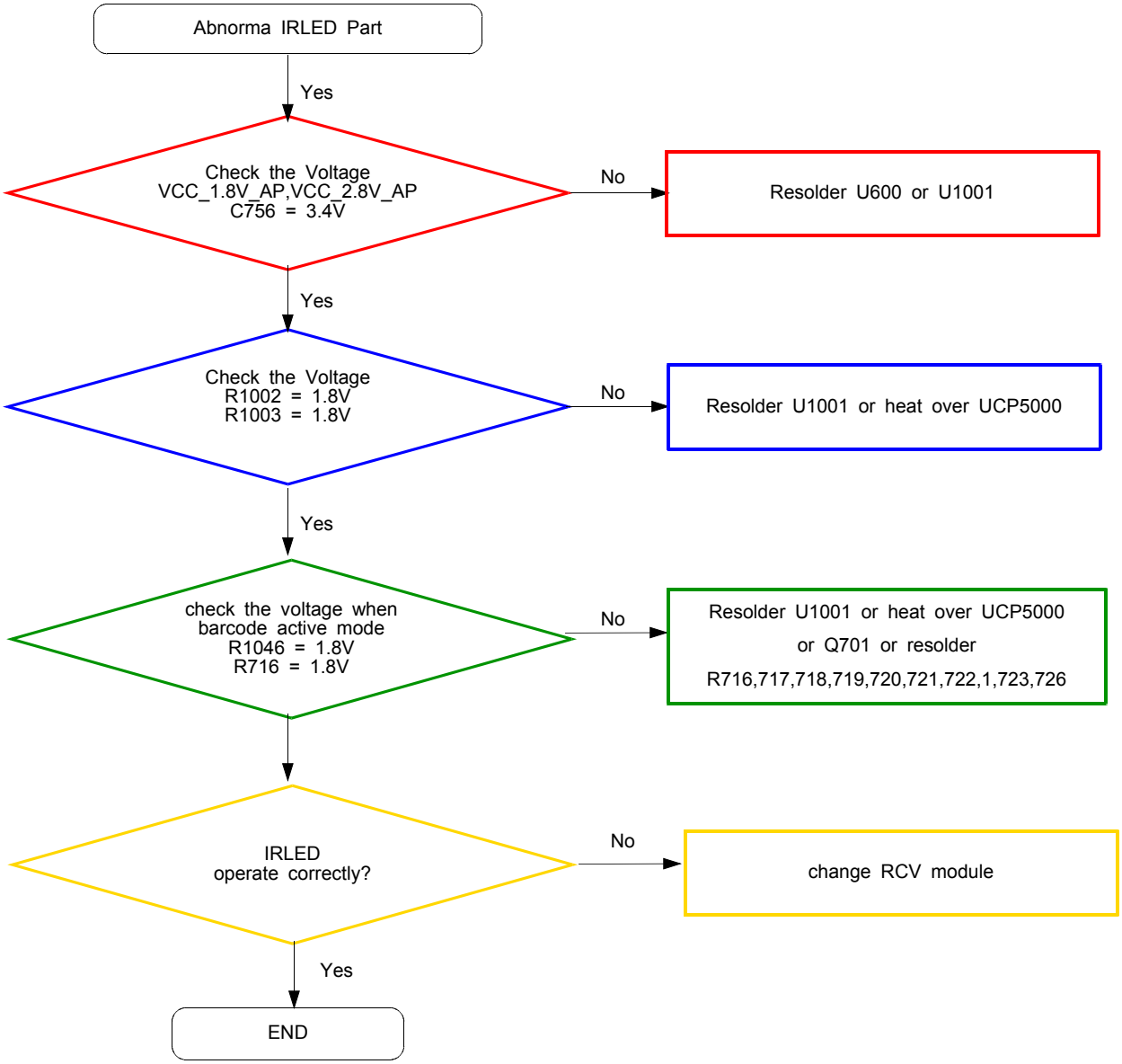
2. IR LED



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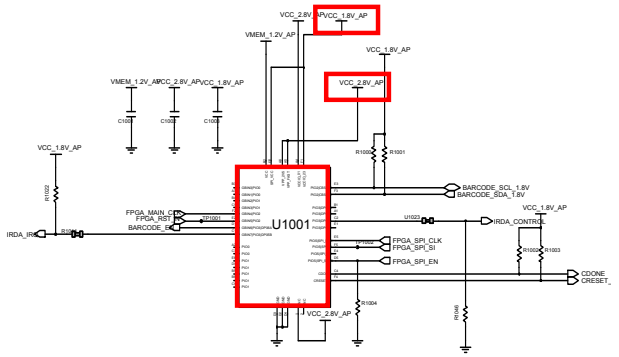
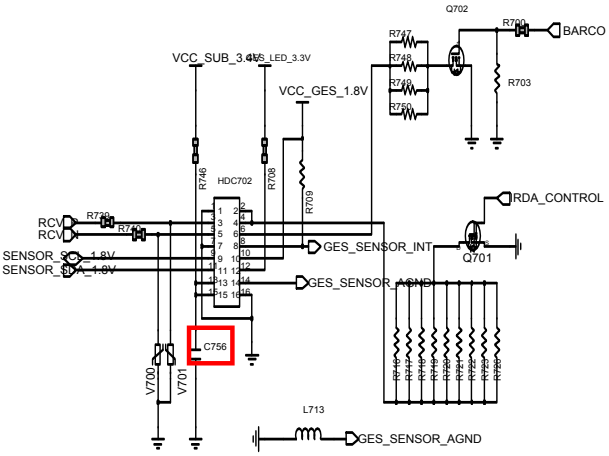
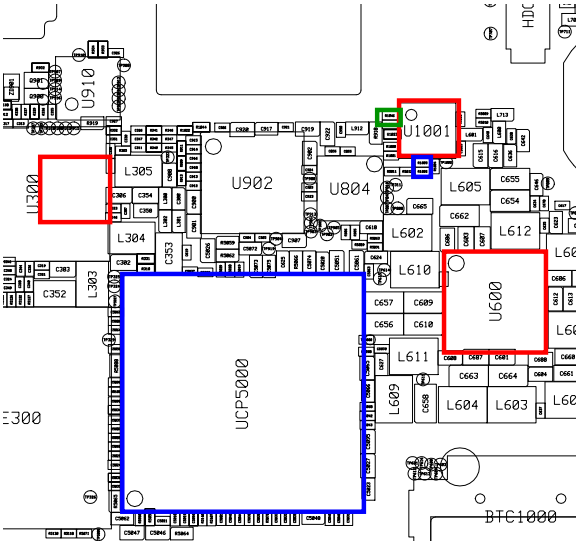
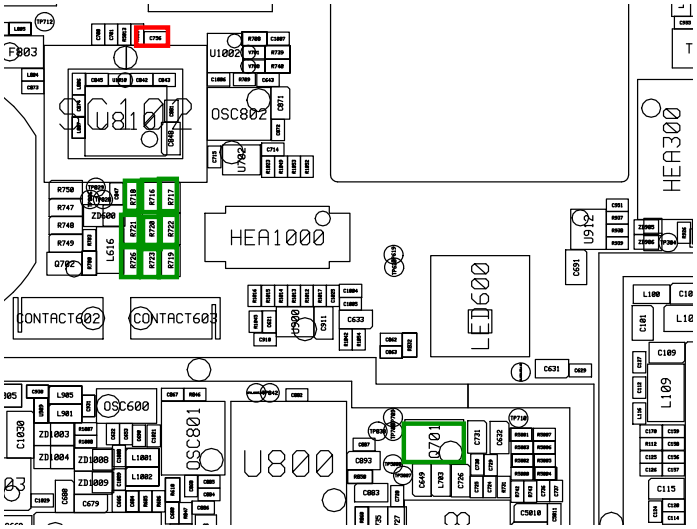




BAR CODER





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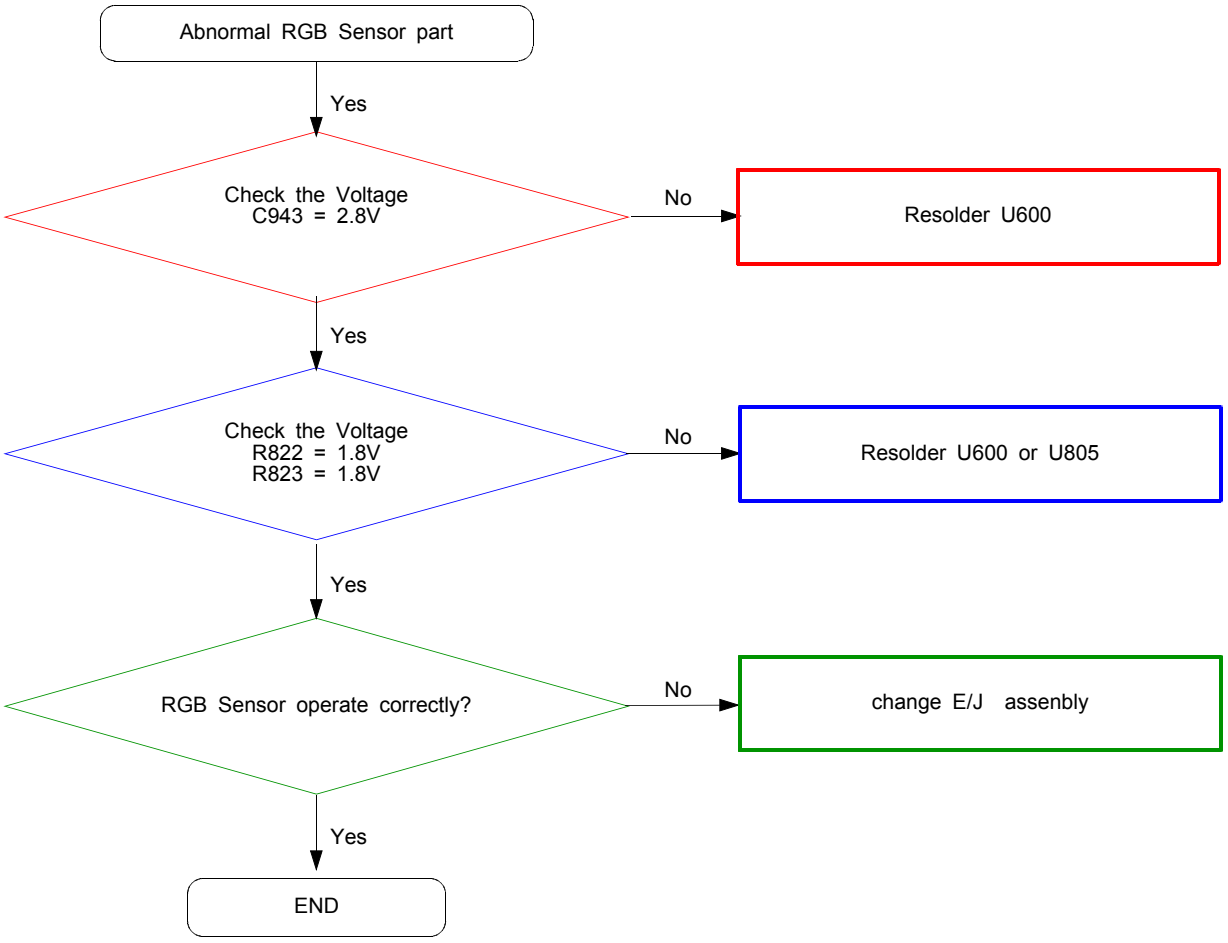
3. RGB Sensor



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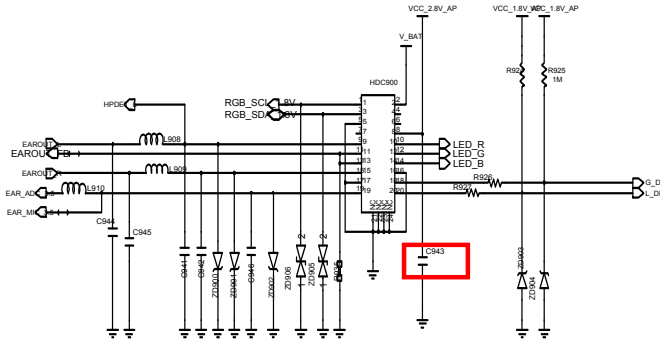
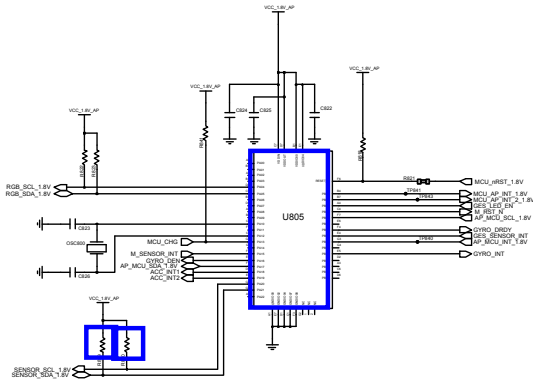
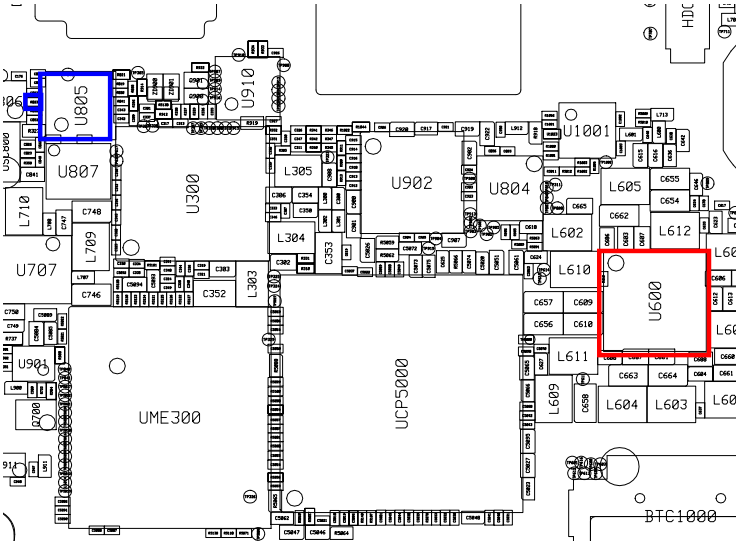
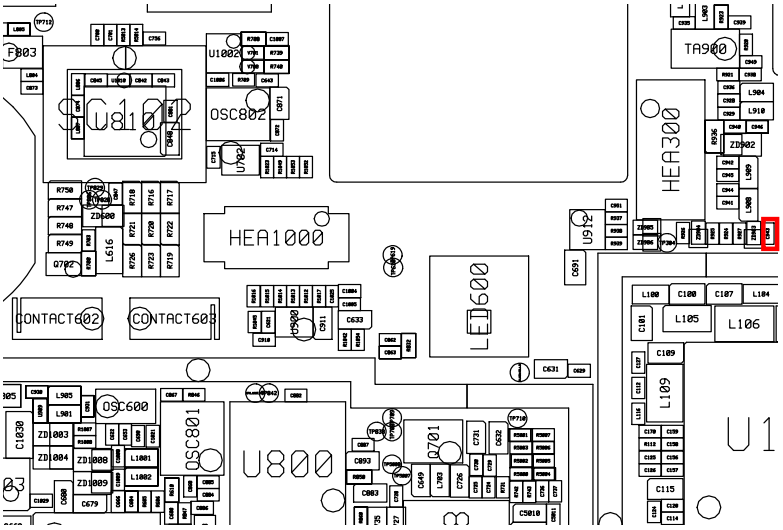


SENSOR HUB



E/J + RGB + S\





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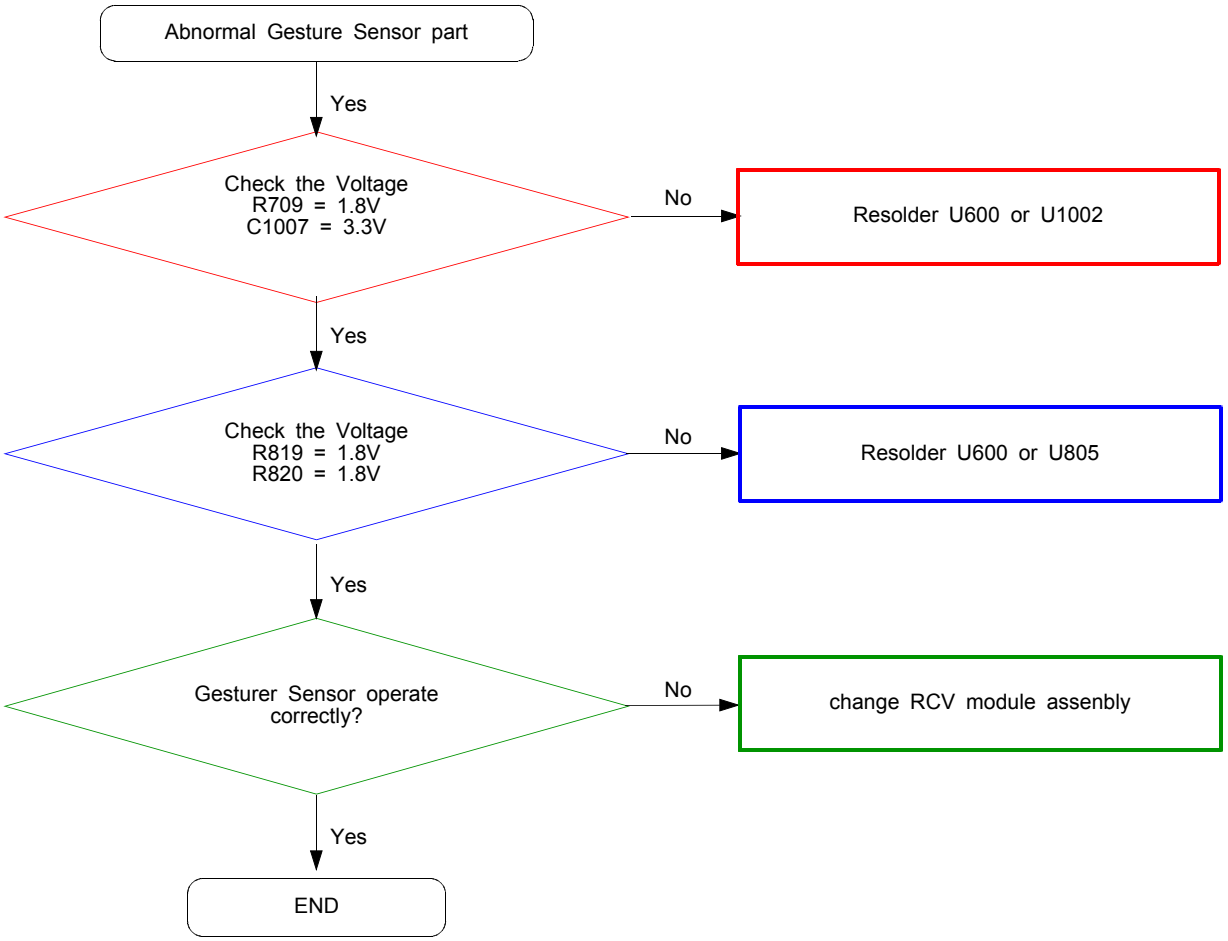
4. GESTURE Sensor



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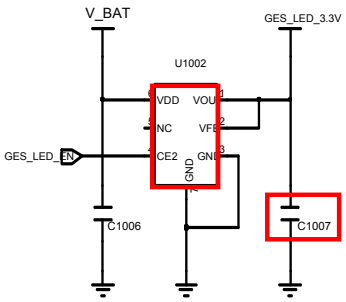
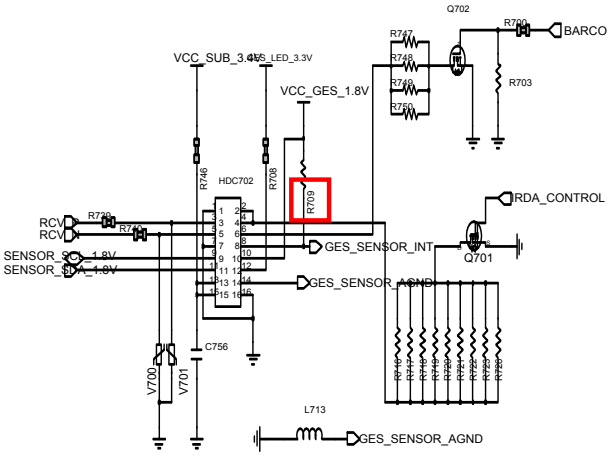
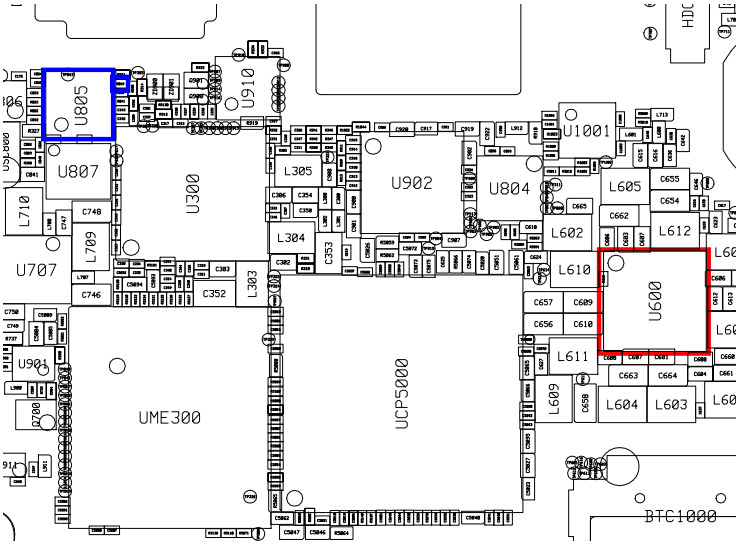
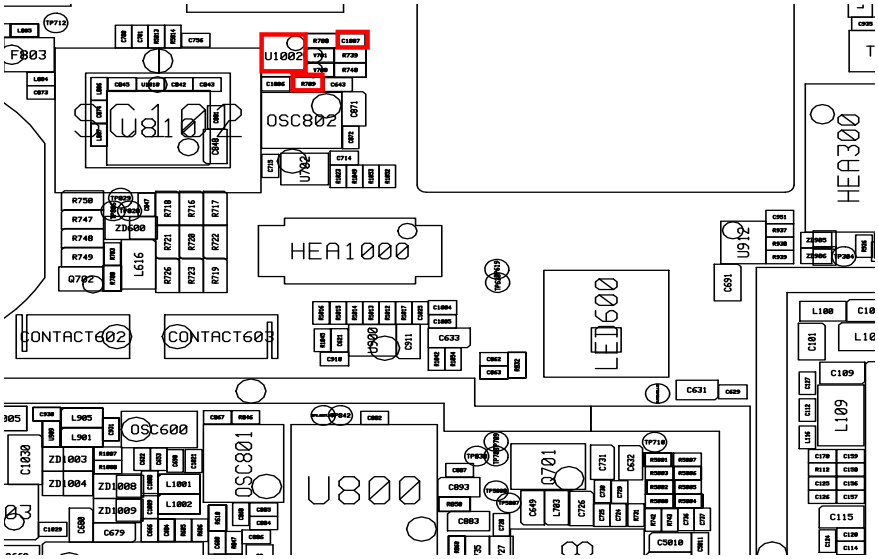




Gesture Sensor





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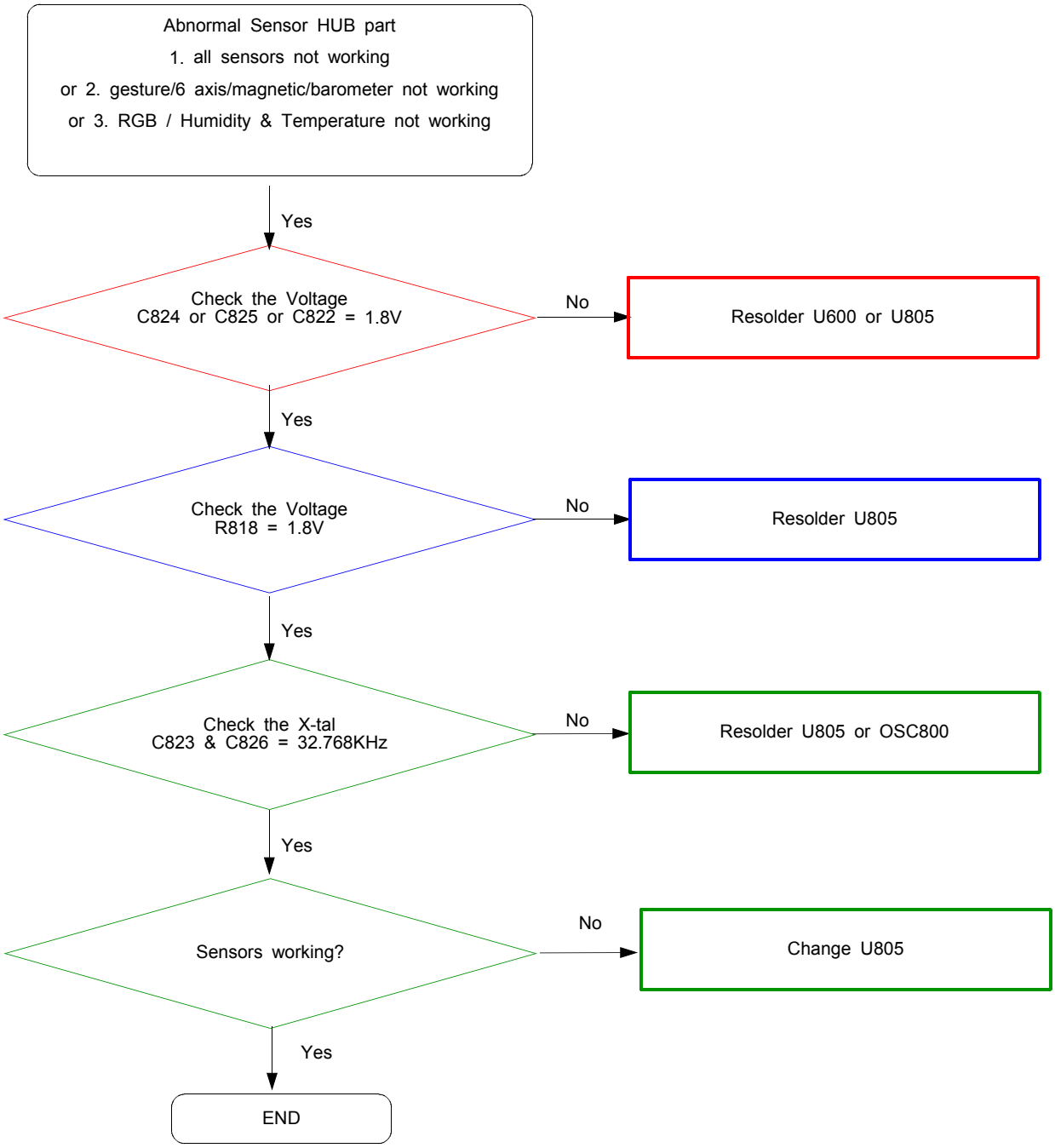
5. Sensor HUB part



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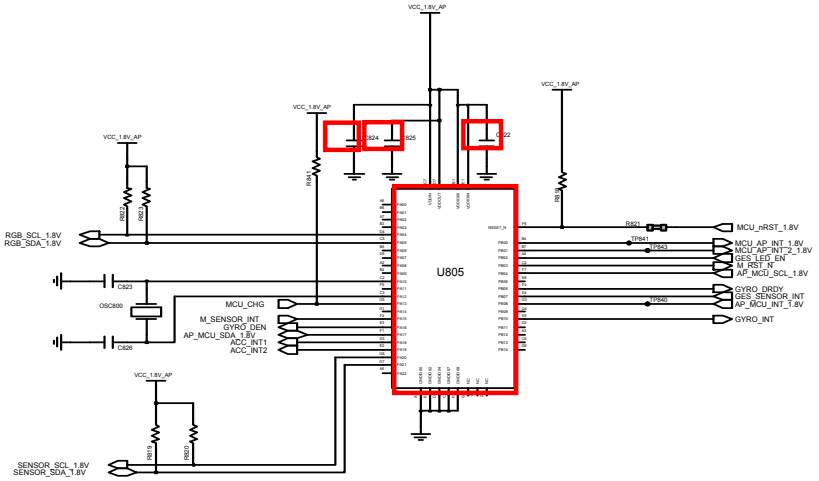
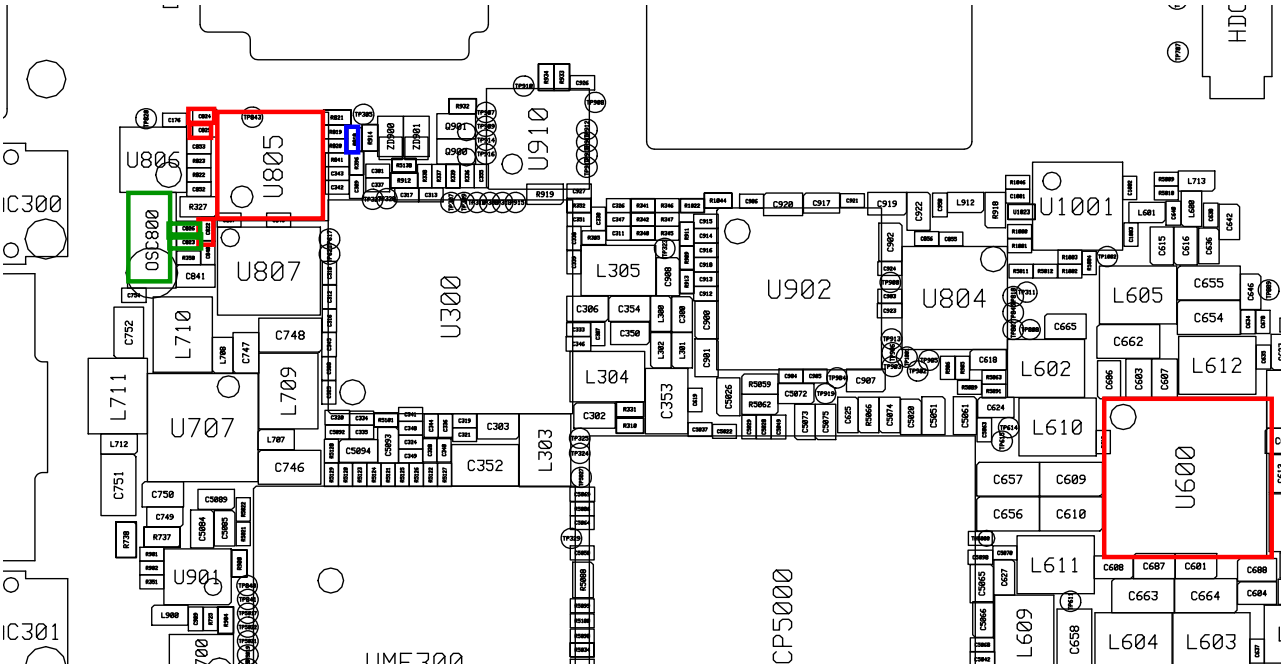
SENSOR HUB





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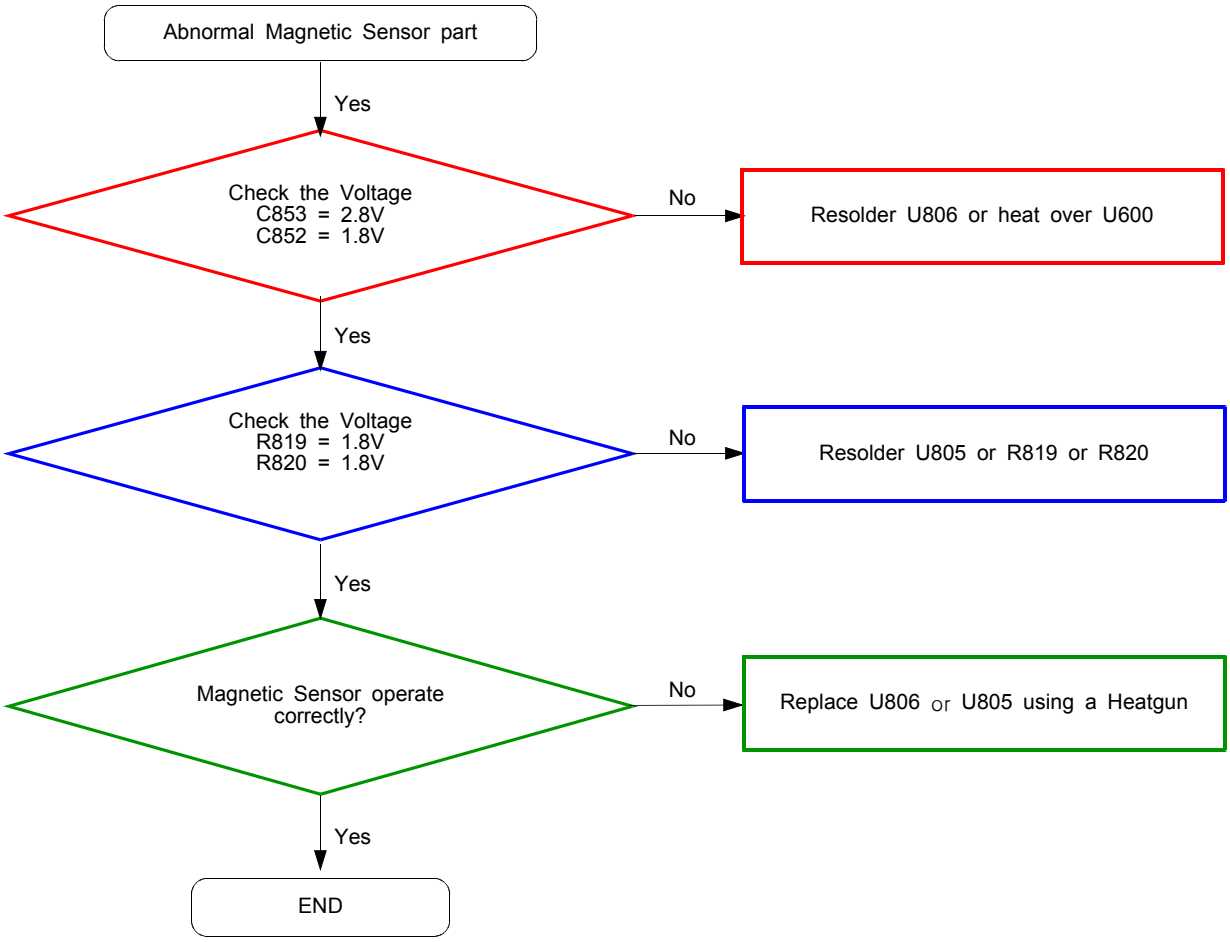
6. Magnetic Sensor



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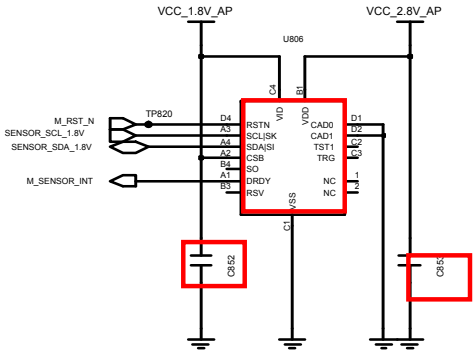
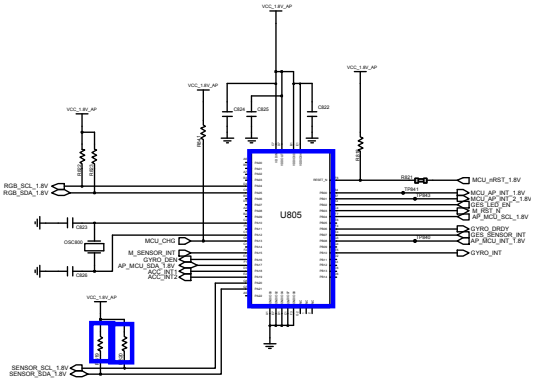
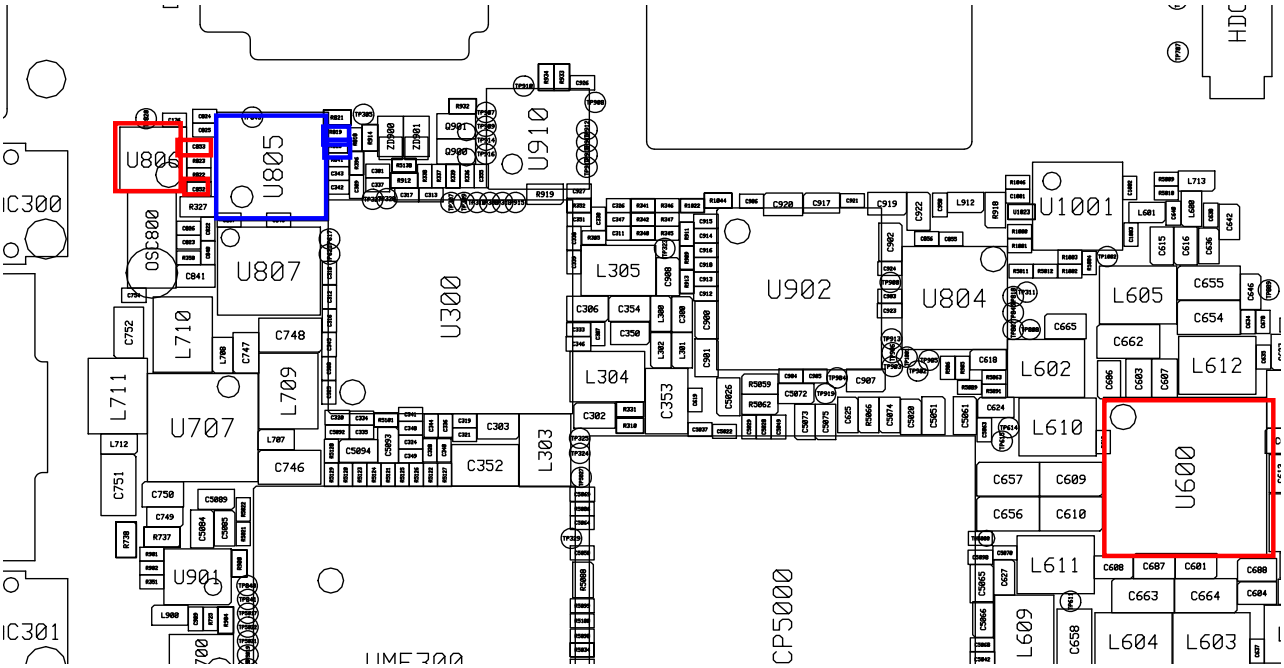


Magnetic Sensor

SENSOR HUB





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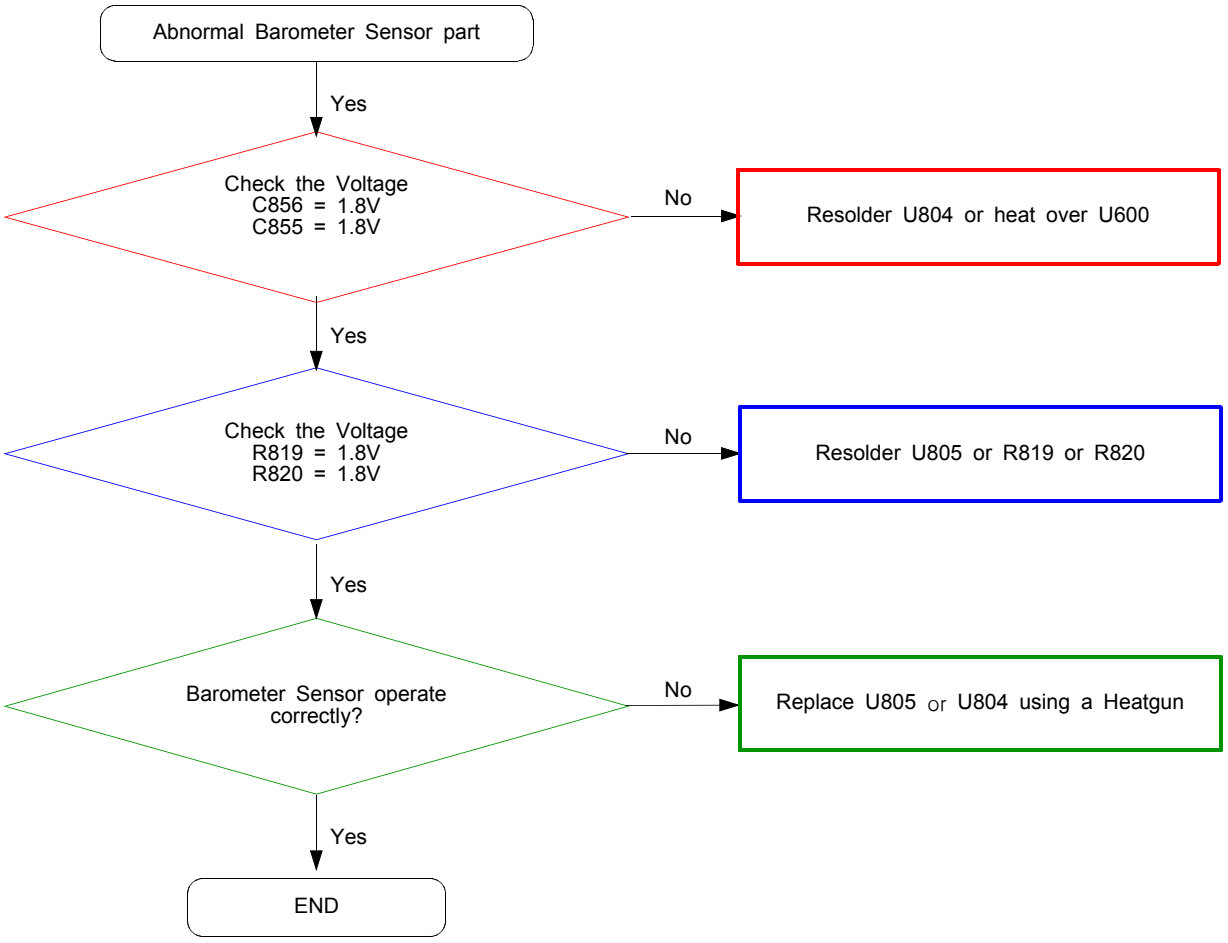
7. Barometer Sensor



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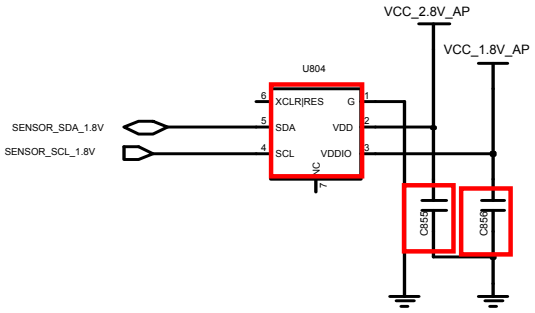
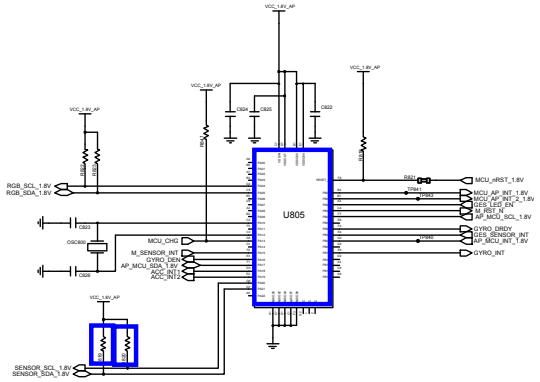
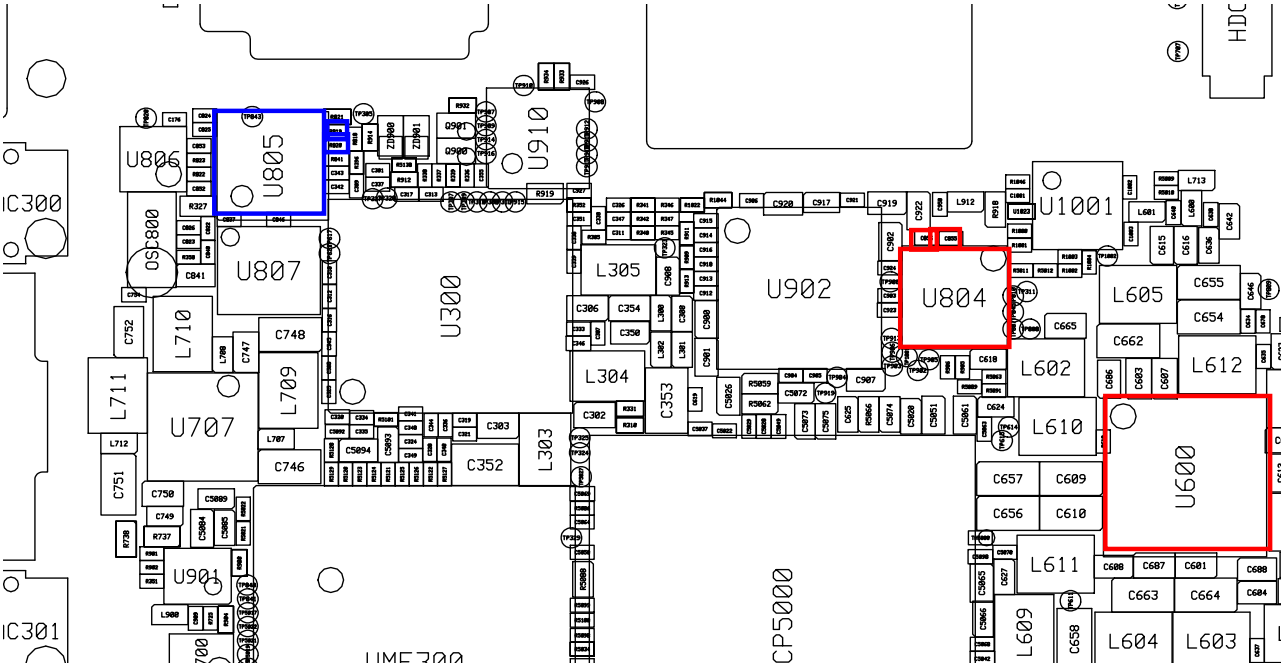


SENSOR HUB



Barometer Sensor



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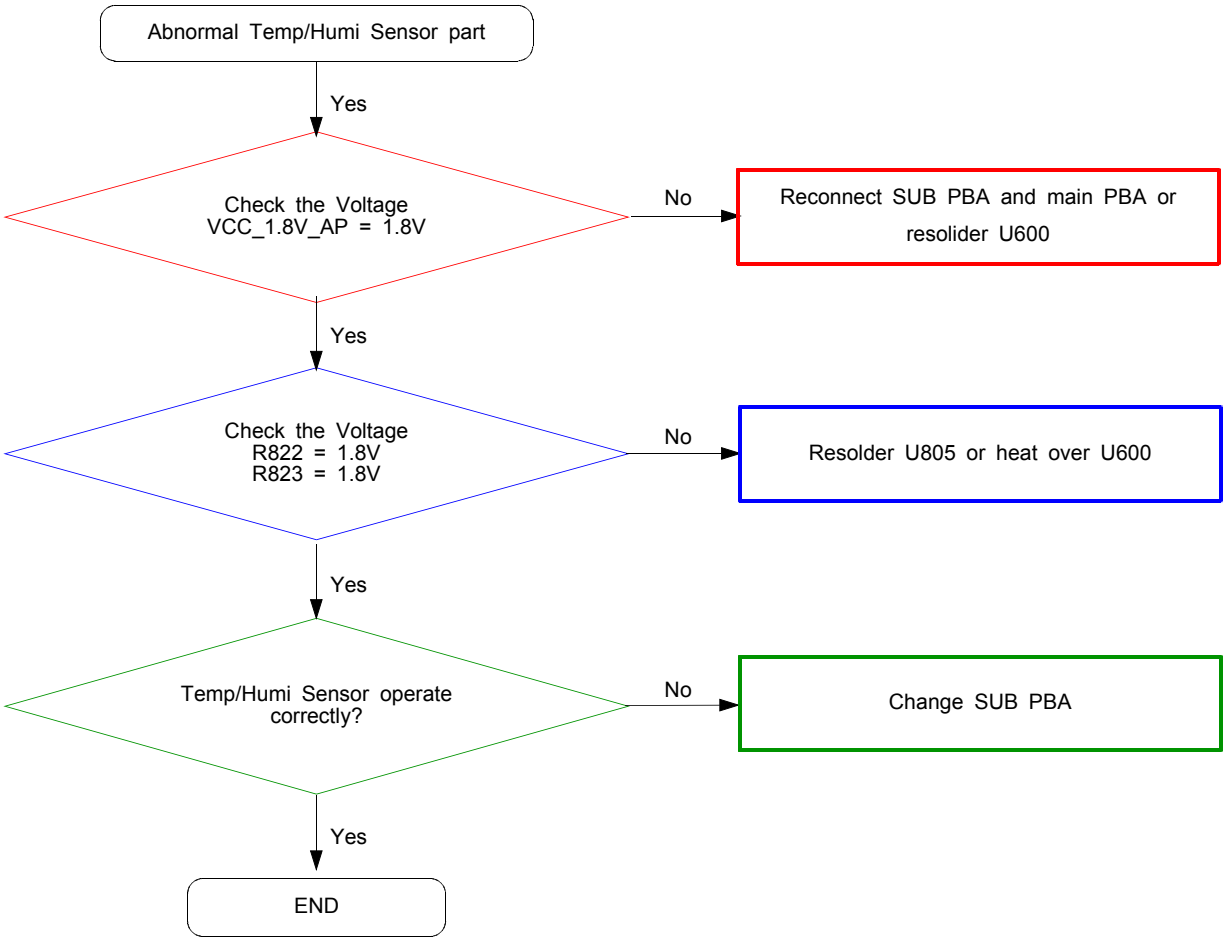
8. TEMP/Humidity sensor



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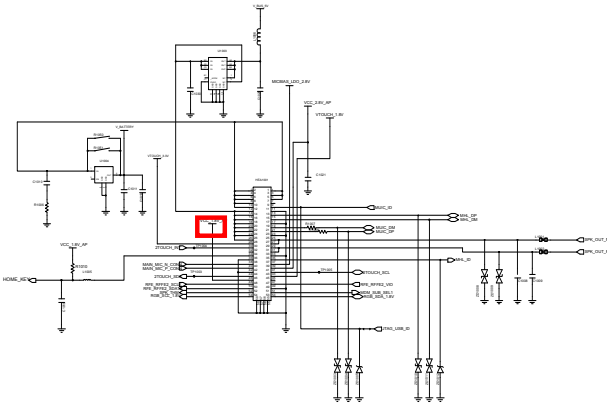
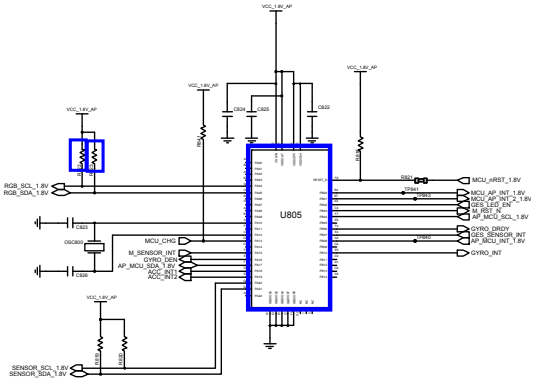
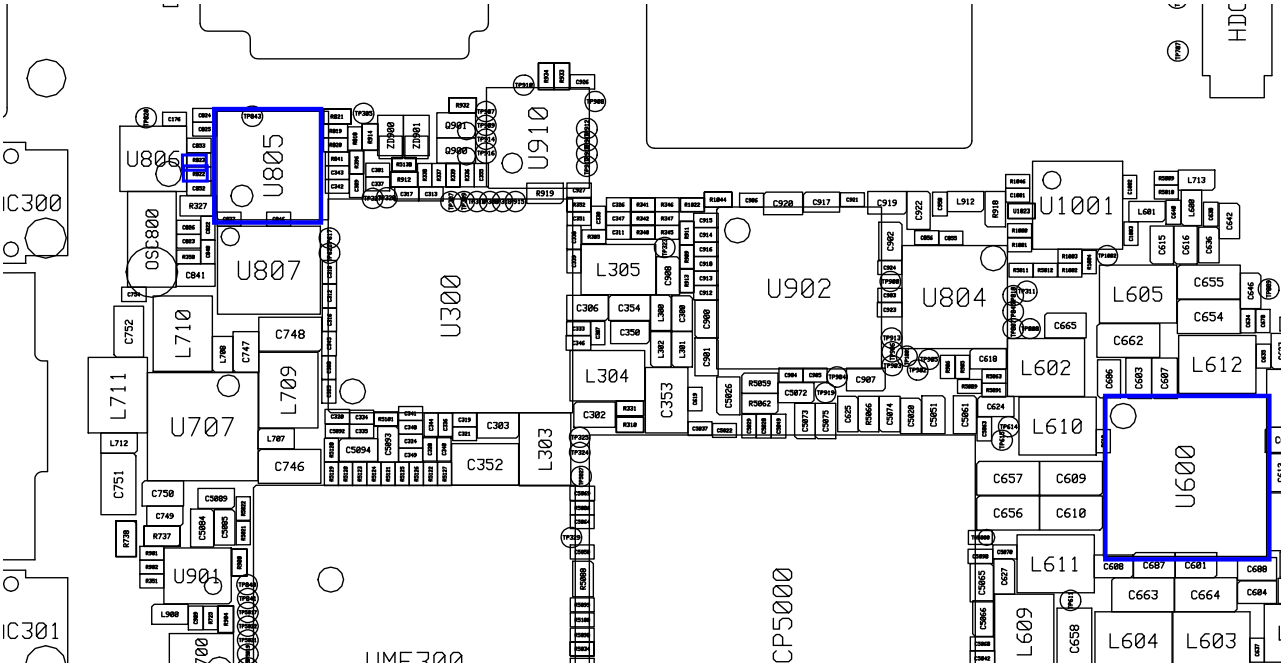
SENSOR HUB



SUB PCB CON.





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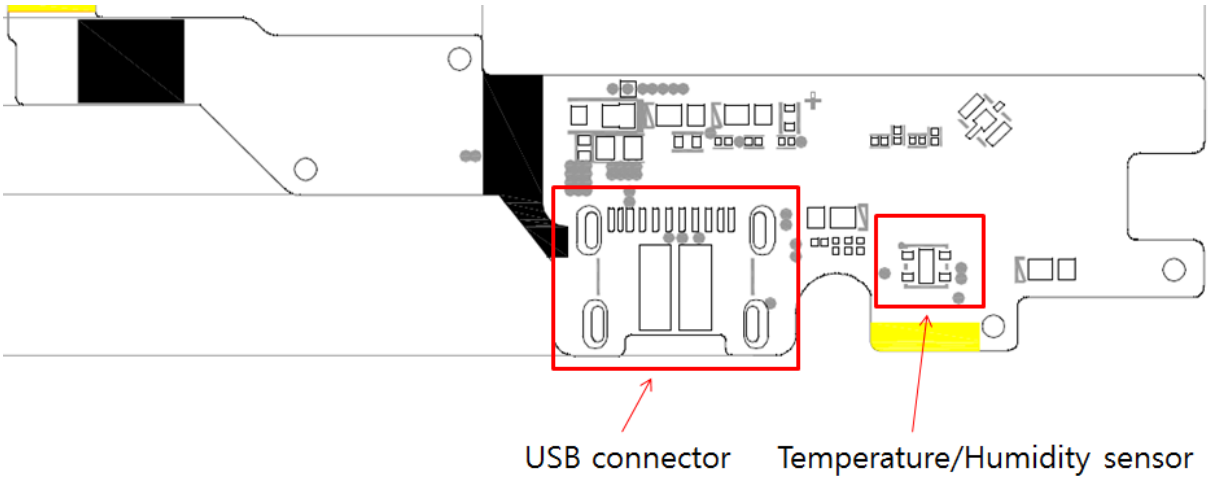
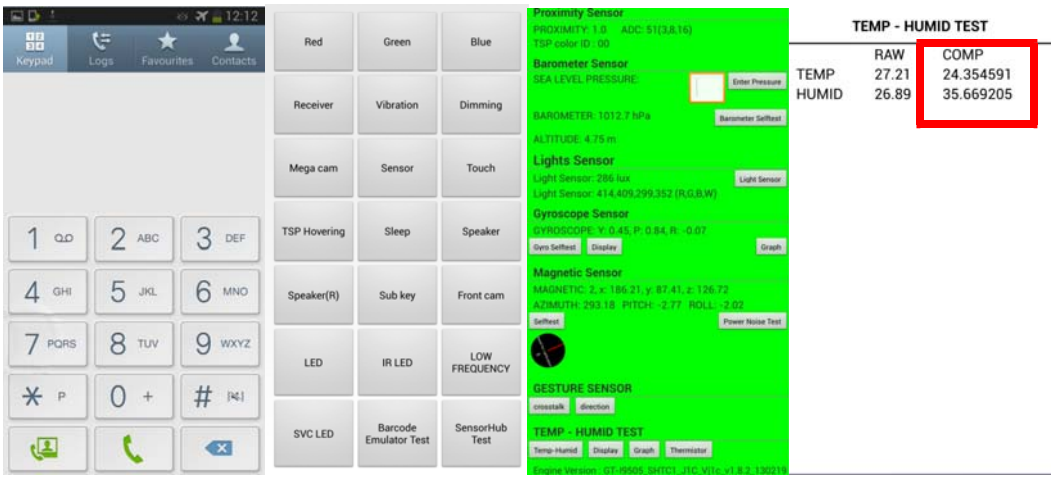
※ CAUTION

Temperature/Humidity sensor should not be directly exposed to the heat-gun when you replace USB connector, because excessive heat can cause abnormal operation of the sensor. The temperature that Temperature/Humidity sensor sees should not exceed 260°C. Use proper heat-shielding material to protect Temperature/Humidity sensor.



※ Temp/Humi Sensor After Repair

1) Keypad : press *#0*#
2) Select "Sensor"
3) Select "Temp-Humid"
4) Read the COMP data (ignore the RAW data)



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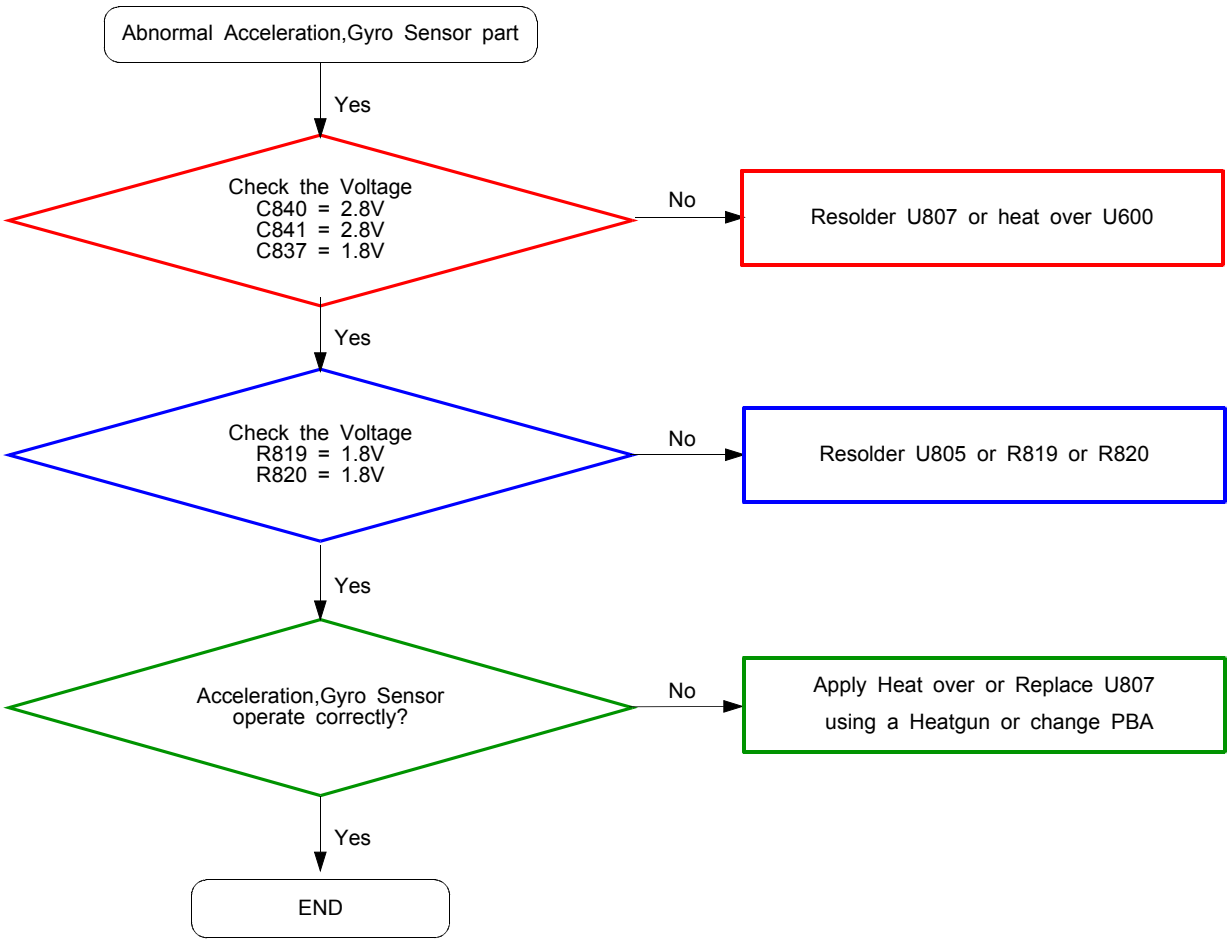
9. Acceleration , Gyro Sensor



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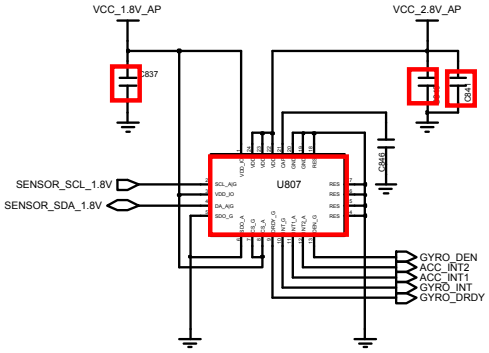
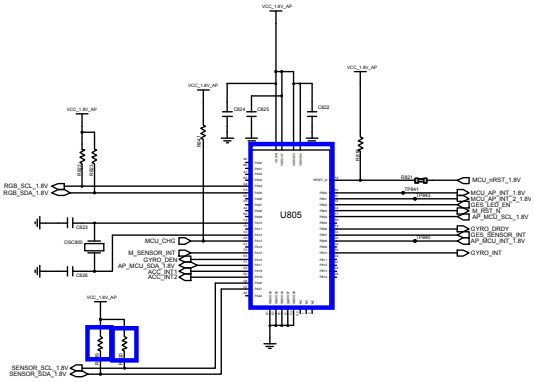
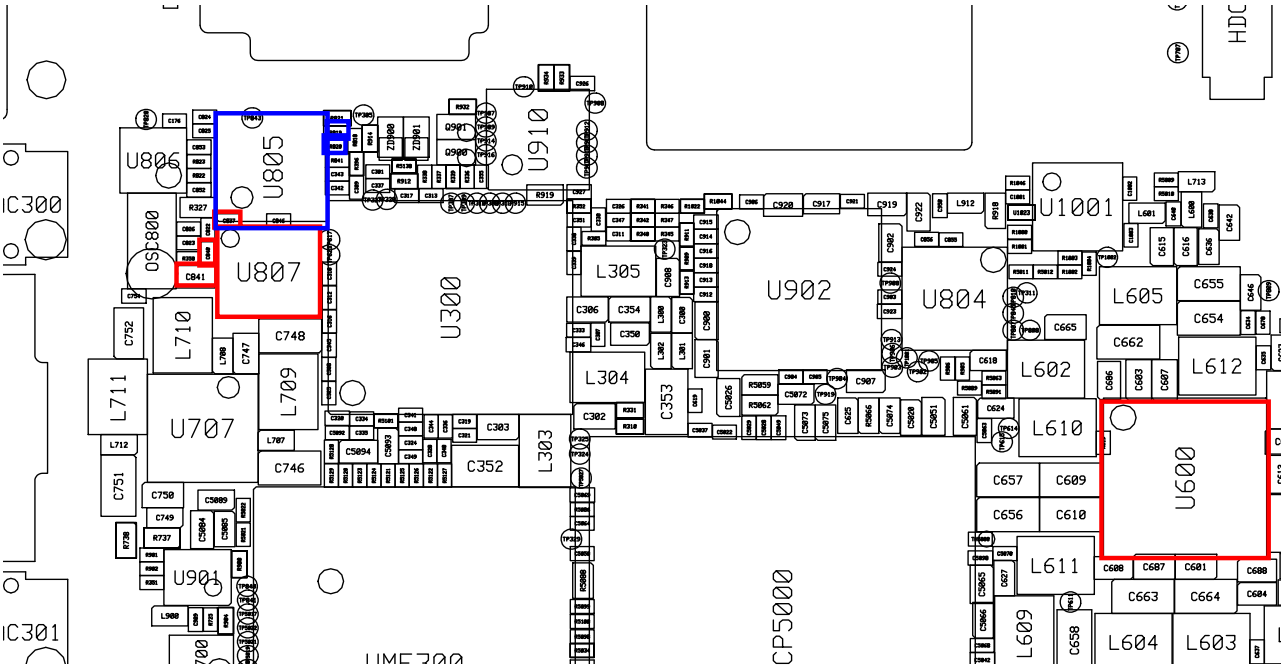


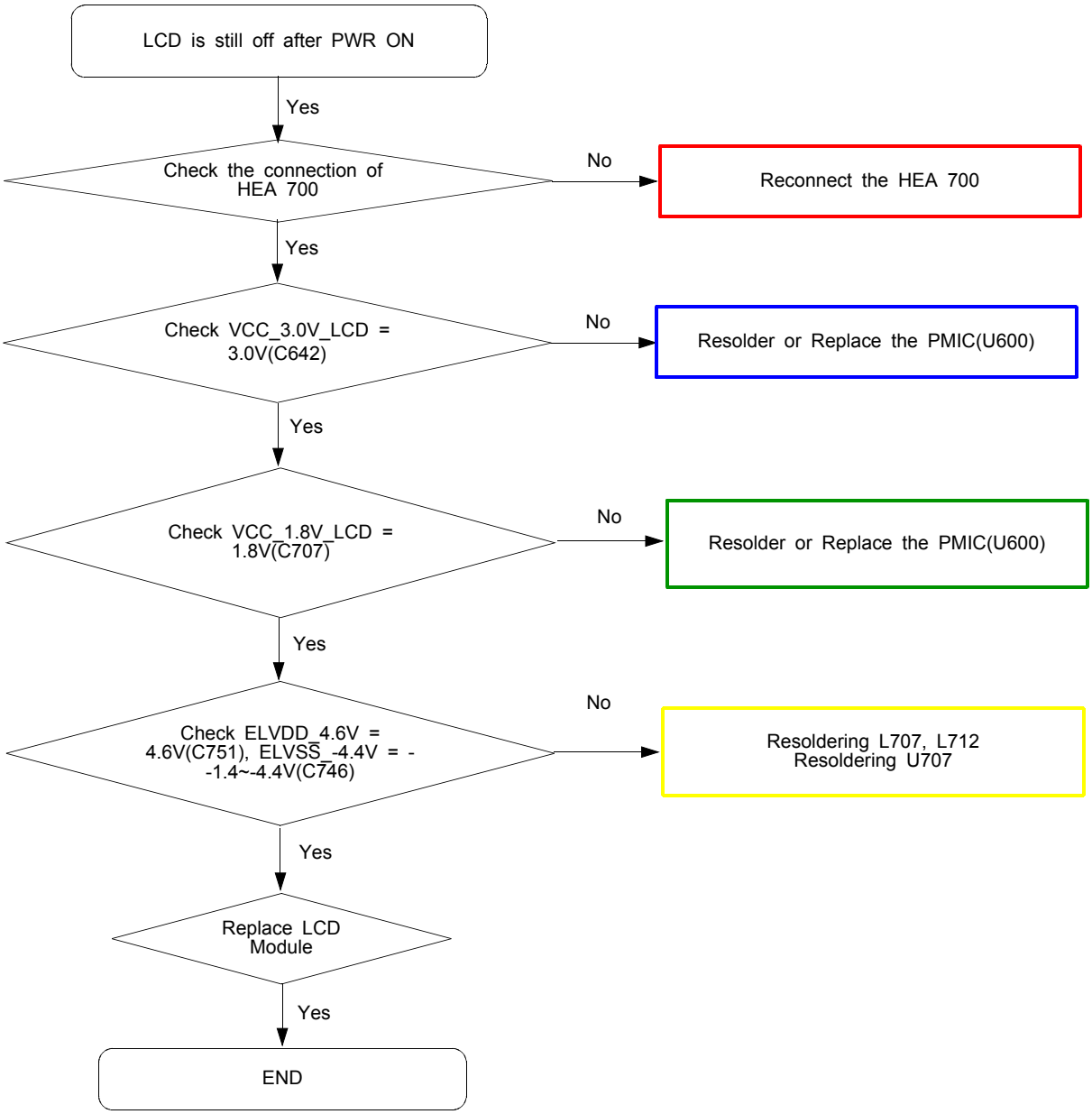
SENSOR HUB



6 Axics Sensor (GYRO,ACCEL)



8-3-25. LCD



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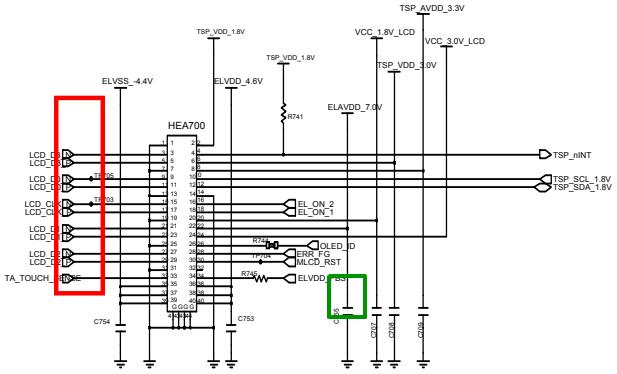

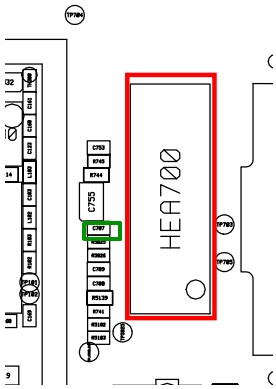

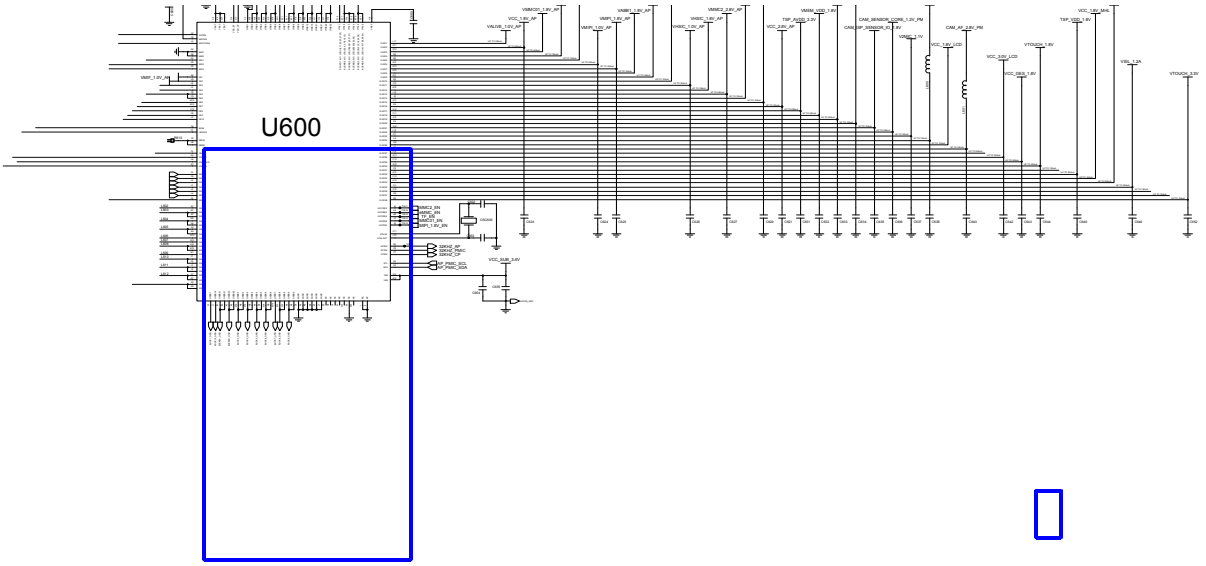

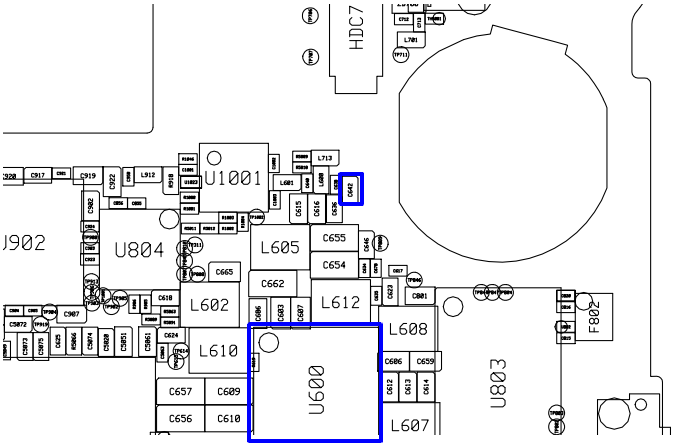

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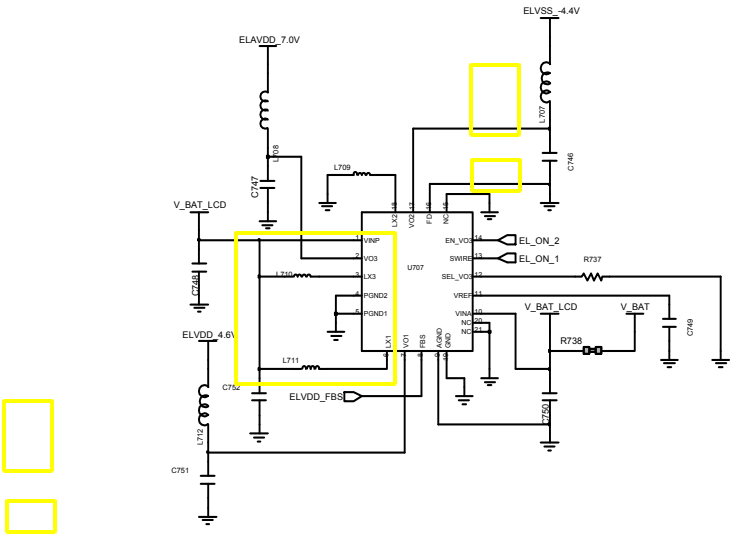
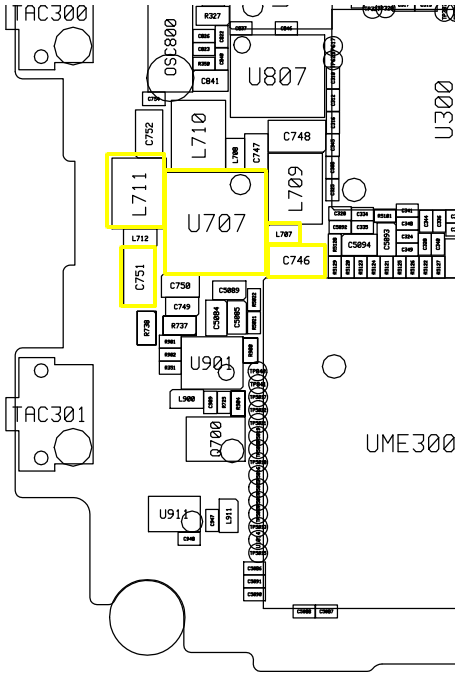


LCD DCDC



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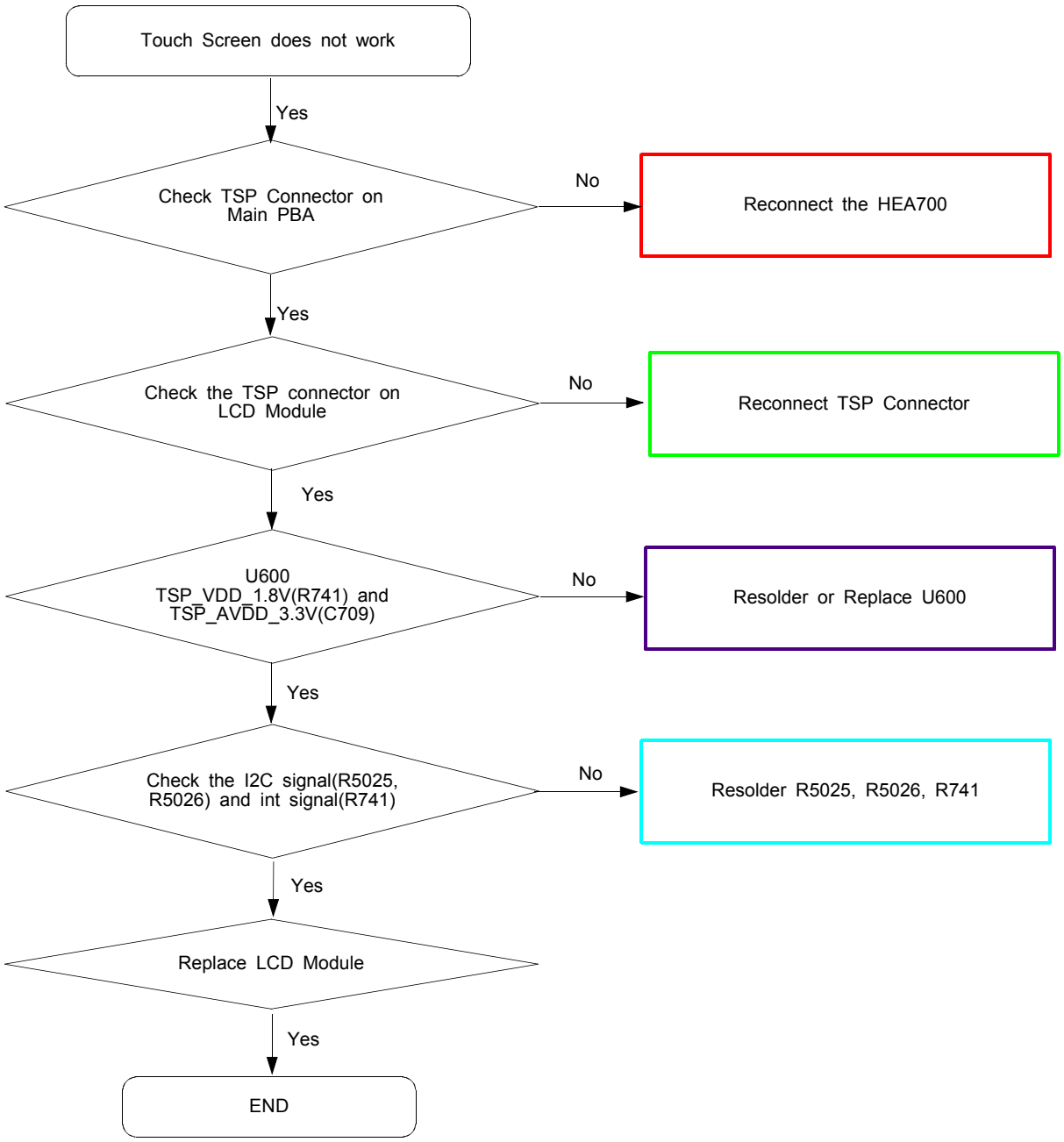
8-3-26. TSP



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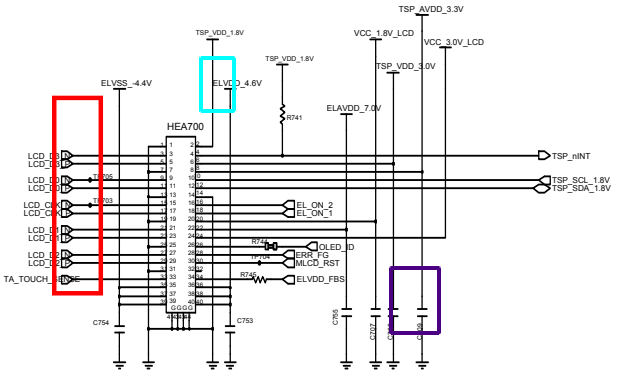

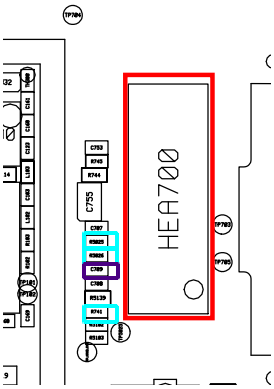

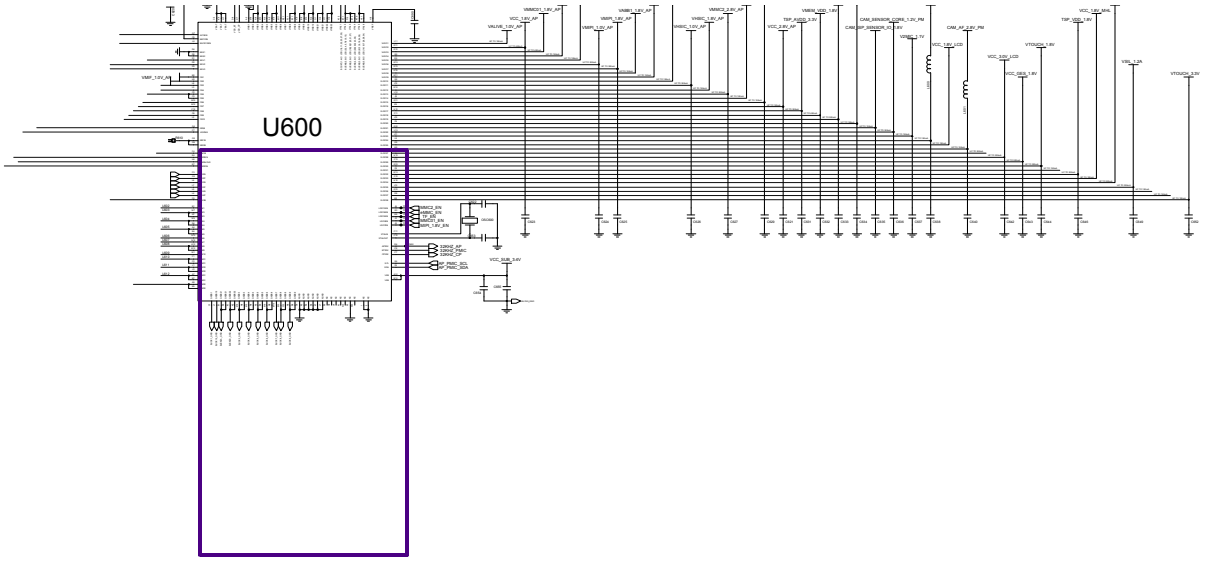

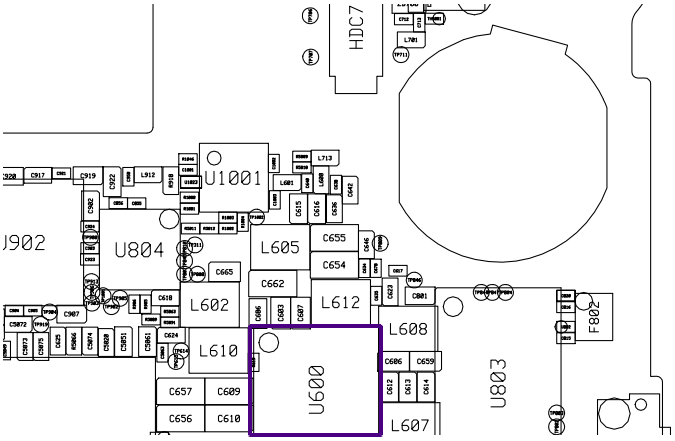

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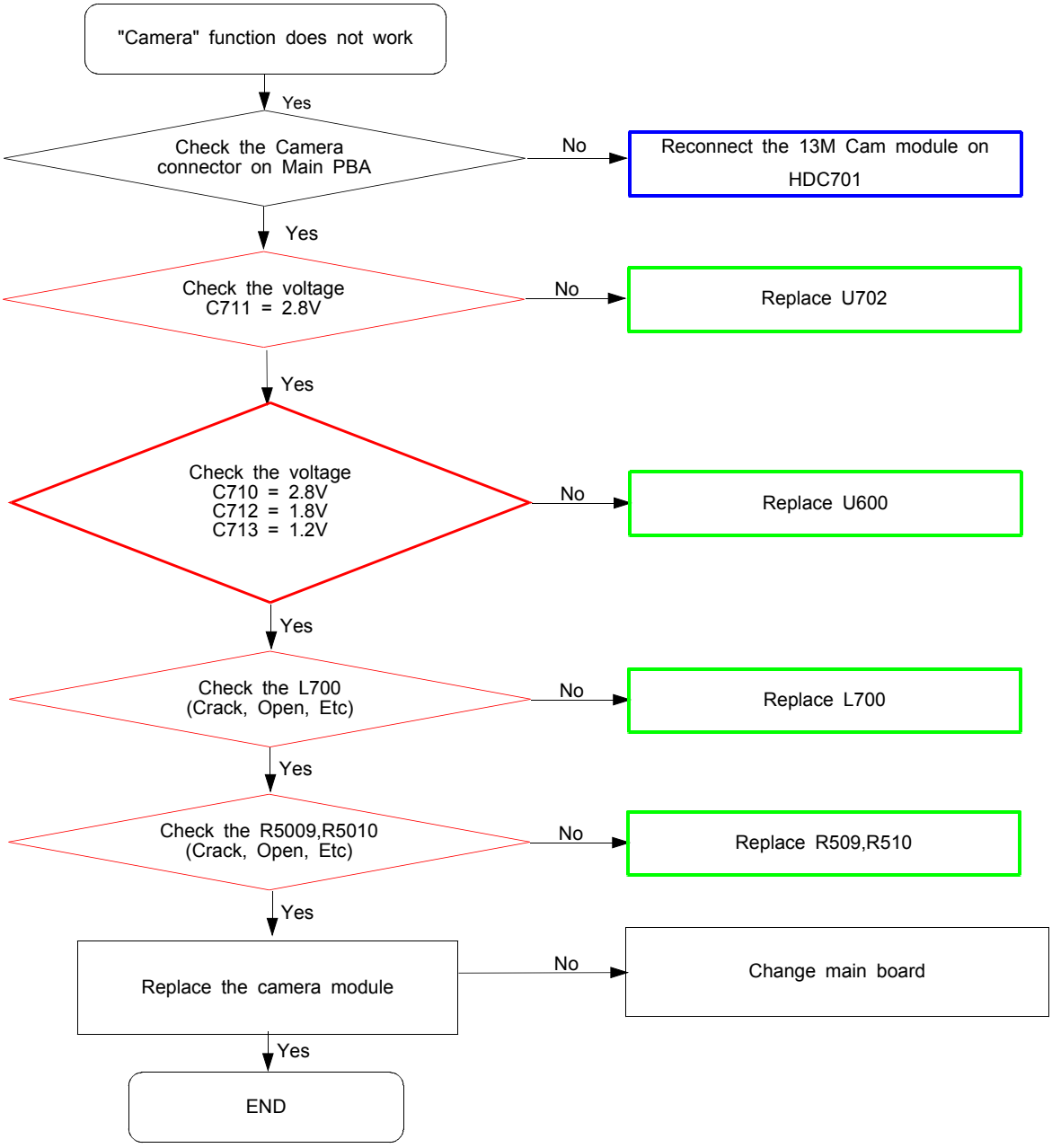
8-3-27. 13M CAM



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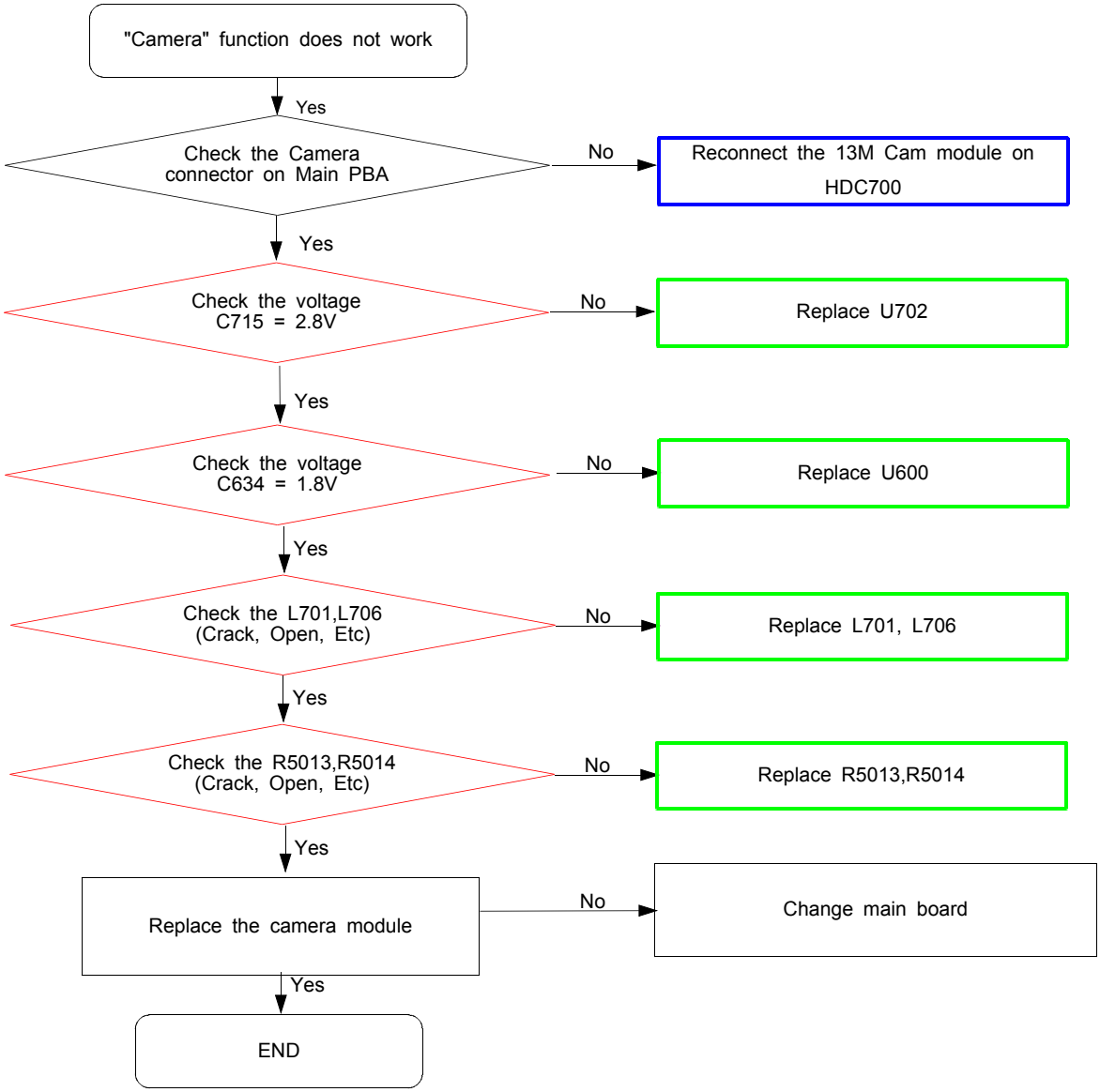
8-3-28. 2M CAM



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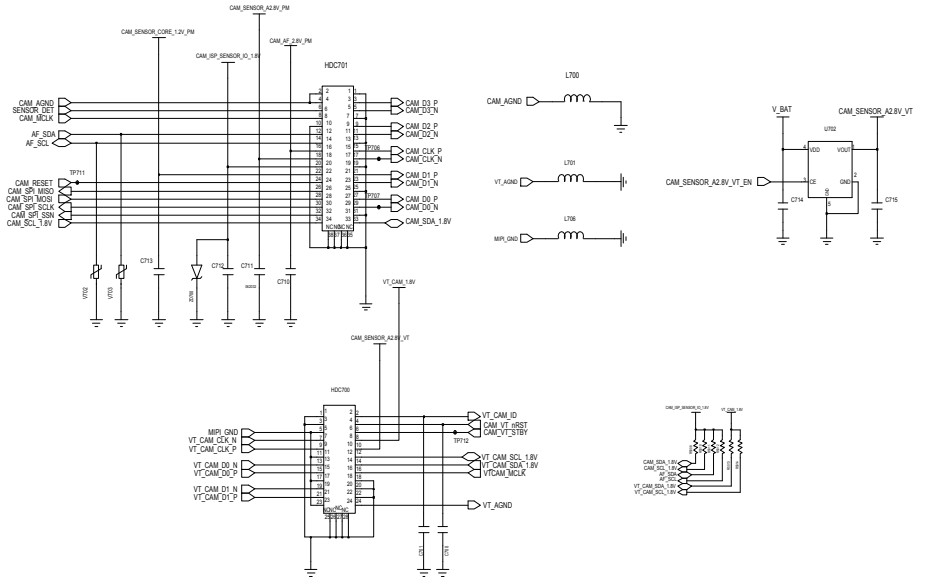

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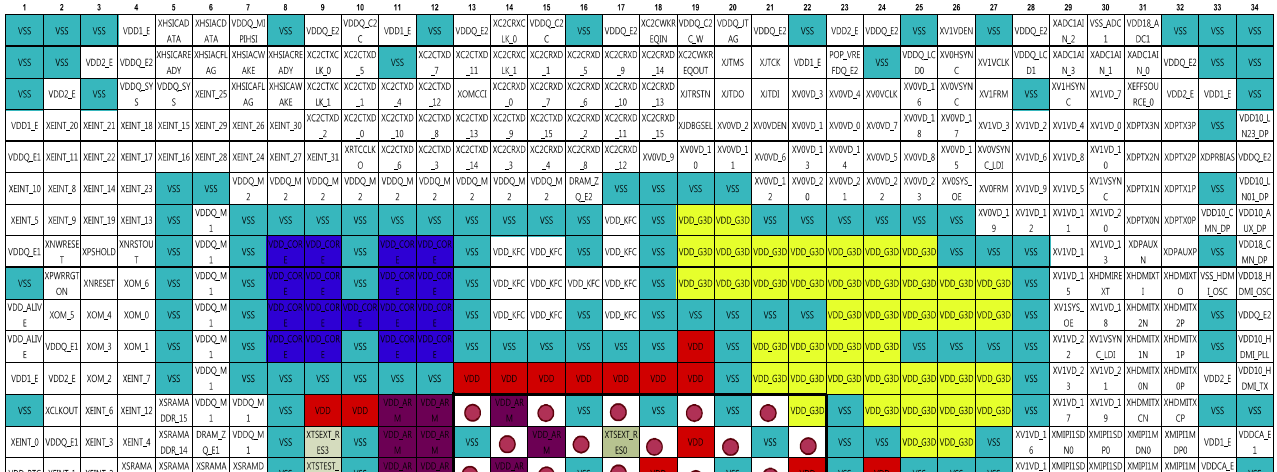
8-5. Service Schematics

-NC Point

UCP5000(AP)



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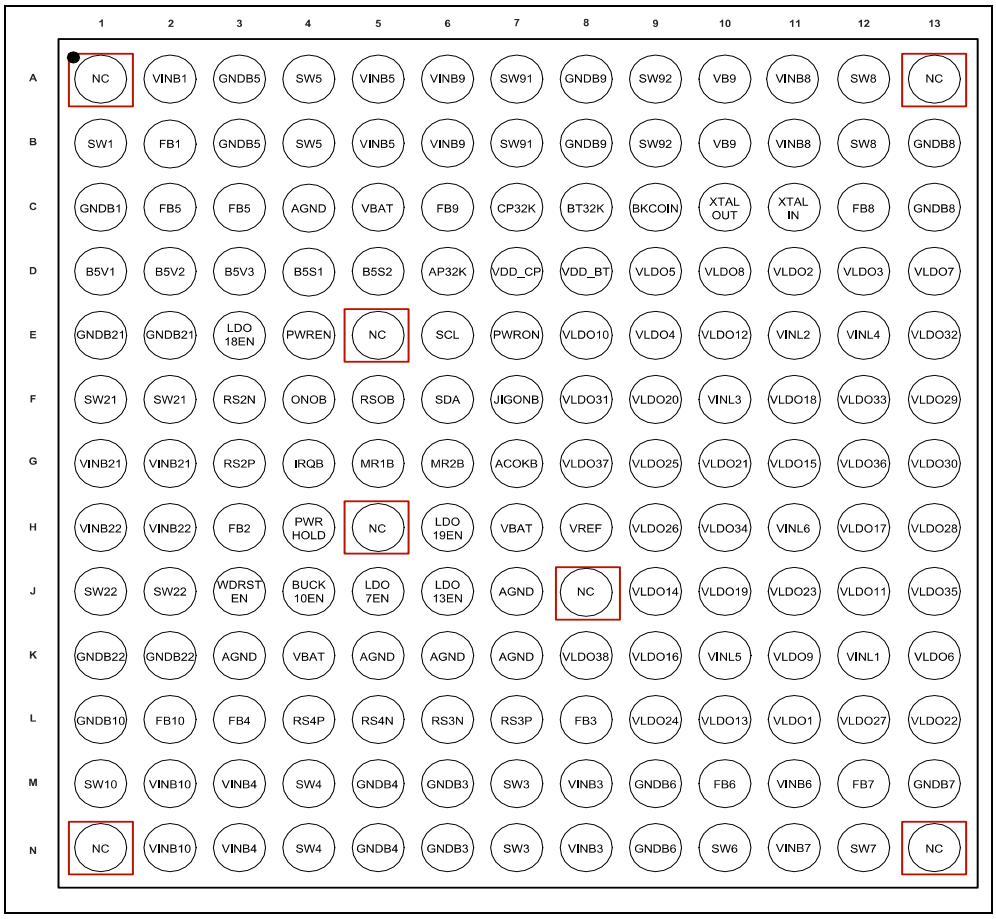
U600(PMIC)


1 2 3 4 5 6 7 8 9 10 11 12 13
A NC VINB1 GNDB5 SW5 VINB5 VINB9 SW91 GNDB9 SW92 VB9 VINB8 SW8 NC
B SW1 FB1 GNDB5 SW5 VINB5 VINB9 SW91 GNDB9 SW92 VB9 VINB8 SW8 GNDB8
C GNDB1 FB5 FB5 AGND VBAT FB9 CP32K BT32K BKCOIN XTAL OUT XTAL IN FB8 GNDB8
D B5V1 B5V2 B5V3 B5S1 B5S2 AP32K VDD_CP VDD_BT VLDO5 VLDO8 VLDO2 VLDO3 VLDO7
E GNDB21 GNDB21 LDO 18EN PWREN NC SCL PWRON VLDO10 VLDO4 VLDO12 VINL2 VINL4 VLDO32
F SW21 SW21 RS2N ONOB RSOB SDA JIGONB VLDO31 VLDO20 VINL3 VLDO18 VLDO33 VLDO29
G VINB21 VINB21 RS2P IRQB MR1B MR2B ACOKB VLDO37 VLDO25 VLDO21 VLDO15 VLDO36 VLDO30
H VINB22 VINB22 FB2 PWR HOLD NC LDO 19EN VBAT VREF VLDO26 VLDO34 VINL6 VLDO17 VLDO28
J SW22 SW22 WDRST EN BUCK 10EN LDO 7EN LDO 13EN AGND NC VLDO14 VLDO19 VLDO23 VLDO11 VLDO35
K GNDB22 GNDB22 AGND VBAT AGND AGND AGND VLDO38 VLDO16 VINL5 VLDO9 VINL1 VLDO6
L GNDB10 FB10 FB4 RS4P RS4N RS3N RS3P FB3 VLDO24 VLDO13 VLDO1 VLDO27 VLDO22
M SW10 VINB10 VINB4 SW4 GNDB4 GNDB3 SW3 VINB3 GNDB6 FB6 VINB6 FB7 GNDB7
N NC VINB10 VINB4 SW4 GNDB4 GNDB3 SW3 VINB3 GNDB6 SW6 VINB7 SW7 NC

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